Installation and user guide
Inverter
2100 H, 3000 H, 4000 H, 4600 H

EN As at 09/2012, Material no. 753 840-AB

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1 Introduction

1.1 PLATINUM H

Inverters in the PLATINUM H series are single-phase feed-in inverters for different power ranges; see "Technical data" on page 86.
Inverters in the PLATINUM H series are equipped with an integrated web server, which allows data to be viewed and evaluated via a network or via the internet.
Up to 30 PLATINUM H inverters can be connected to form a single inverter system via the CAN network.

1.2 About this manual

This installation and operating manual describes the installation and operation of the PLATINUM inverters of the types 2100 H, 3000 H, 4000 H, 4600 H.

Additional documents

The following additional documents are available in the download area of our website www.platinum-nes.com:

- Detailed installation and user guide
- Information on fault current protection devices
- Detailed list of events for detecting/eliminating faults
- Overview of country and grid codes
- Declaration of conformity and certificates
- Manufacturer's warranty

1.3 Symbols used

1.3.1 Notes

Notes give tips on how to work easily and safely or contain further information.

1.3.2 Structure of warnings

WARNING WORD
Type, source and consequence of the hazard!
► Measures to avoid the hazard.

1.3.3 Hazard levels in warnings

Symbol	Warning word	Probability of occurrence	Consequences of non-observance
	DANGER	Imminent danger	Death, serious injury
	WARNING	Potential danger	Death, serious injury
	CAUTION	Potential danger	Minor injury
–	CAUTION	Potential danger	Damage to property

1.4 Symbols on product and packaging

The following symbols are used on the type plate on the bottom right-hand side of the inverter:

Symbol	Meaning
	High voltage Risk of electric shock
 60 min	**Discharge time: 60 minutes** High voltages may still be present in the interior of the inverter up to 1 hour after it is switched off.
	Hot surface The cooling element on the rear of the inverter can get very hot and reach temperatures of up to 90°C.
	Read the manual Read this manual before carrying out any work on the inverter.
	Disposal ▪ Do not dispose of PLATINUM inverters in household waste. ▪ Packaging and replaced parts are to be disposed of in accordance with the regulations of the country in which the inverter was installed.

2 Safety

2.1 Intended usage

- Inverters are to be used solely for the purpose of feeding photovoltaically generated solar energy into the public grid.
- All other usage does not comply with the regulations.

2.2 Improper usage

- The inverters are not to be used in island grids.
- The inverters are not to be used in vehicles.
- The inverters are not to be used in areas at risk of explosion (flour dust, sawdust, etc.).
- The inverters are not to be exposed to direct sunlight.
- The inverters are not to be used in areas in which the ammonia content of the air exceeds 20 ppm.
- All warranty claims will be rendered null and void in the event of failure to comply with the warranty terms or the information provided in this operating and installation manual.

2.3 Personnel requirements

The inverter may only be installed and put into operation in accordance with this installation and user guide by trained specialist personnel, for example:

- Service partners who are authorised by PLATINUM
- Authorised specialist personnel with knowledge of the applicable guidelines and standards

2.4 General safety instructions

- The inverters are to be used in their original state without independent modifications and in a technically perfect condition.
- Steps must be taken to ensure that the following are adhered to when assembling and connecting the inverter and the PV system:
  - Guidelines and regulations valid in the respective country
  - Provisions of the trade associations, TÜV, VDE (Association for Electrical, Electronic & Information Technologies)
  - Technical connection conditions of the energy supplier responsible
  - National and international regulations and provisions
- Ensure that all protection devices are working correctly.
- Observe the operating conditions - refer to "Technical data" on page 86.

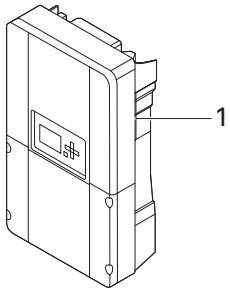
3 Installation

3.1 Scope of delivery

- Inverter
- Wall bracket
- Brief guide
- Installation materials
- Grounding kit

3.2 Unpacking

CAUTION
Risk of injury!
- ▶ Wear safety shoes when unpacking the inverter and during installation.
- ▶ Ensure that the inverter is positioned securely.



1. Place the box the correct way up on the floor (note the lettering).
2. Cut through the seal and open the box on the top side.
3. Take out the wall bracket from the packaging.
4. Take off the upper padding elements.
5. Raise the inverter by its underside and lift it by the handles (1) out of the box.
6. Remove the lower padding element.
7. Take out the installation materials and the grounding kit.
8. Take out the brief guide.

Enclosed installation materials
- Seals for the AC connection
- Jumpers for grounding and network termination
- Fastening and locking clamp for anti-theft protection

3.3 Assembly

3.3.1 Safety instructions

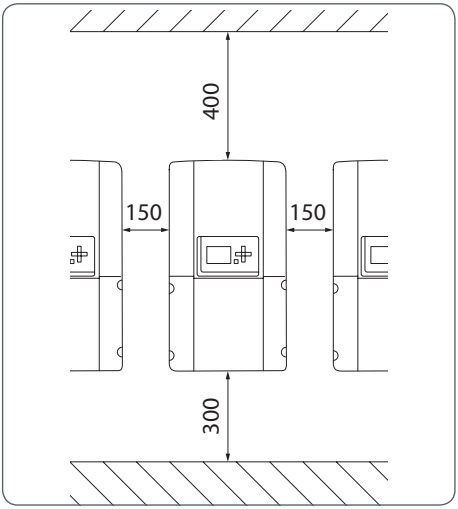
WARNING
Injury may result if the inverter falls!
- ▶ Use fixing materials suited to the assembly wall and the weight of the inverter.
- ▶ Wear safety shoes during assembly and disassembly.
- ▶ Ensure that the inverter is positioned securely.

CAUTION
Damage to the inverter due to excessive buildup of dust.
- ▶ Avoid excessive build-up of dust.
- ▶ Avoid build-up of dust with electrically conductive dust particles.

In order to comply with the requirements of standard IEC-62109, a possibility must be provided for tool-free isolation of the solar generator. If the design does not feature an integrated DC isolator, an external isolation device is mandatory; this must be easily accessible.

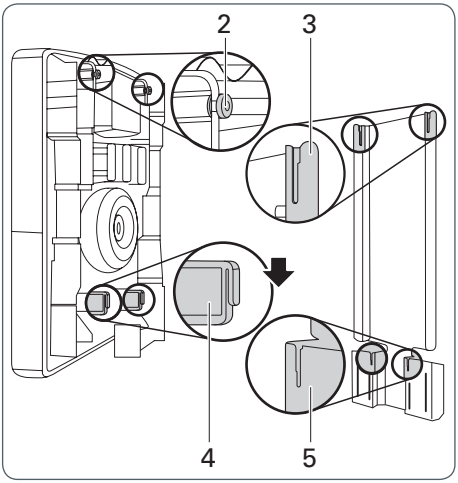
PLATINUM recommends that the inverter should not be installed in living quarters.

3.3.2 Mounting the inverter

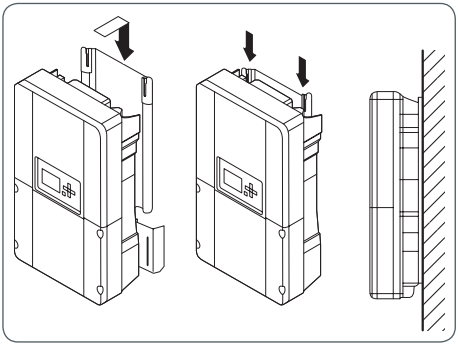


Dimensions in mm

1. Choose a suitable location for mounting. When doing so, note the following:
   - Mount the inverter in a suspended, vibration-free position.
   - The wall chosen for mounting must be suitable for the weight and temperature (90°C).
   - Make sure the correct dimensions and distances are maintained.
   - The display should be at eye level (approx. 1.60 m off the floor).
   - The inverter must be easily accessible without additional tools or equipment.
2. Fix the wall bracket to the assembly wall with suitable fixing materials.

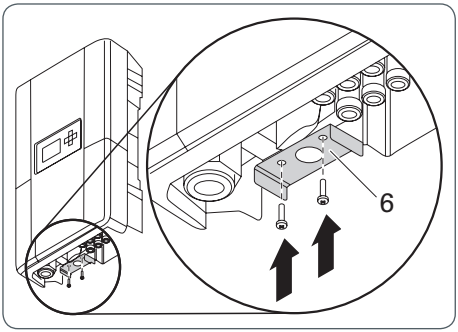


3. Lift the inverter and insert the upper mountings (2) in the upper slots (3) on the wall bracket.
4. Align the lower mountings (4) on the lower slots (5).



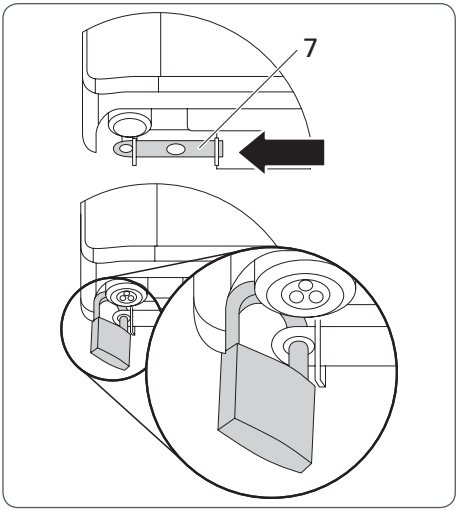
5. Slide the inverter onto the bracket.

Anti-theft protection



Two clamps are included in the scope of delivery, with the aid of which the inverter can be protected against theft.
A padlock is not included in the scope of delivery.

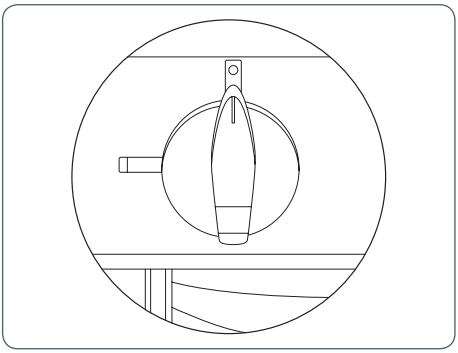
1. Mount the fastening clamp (6) with two screws on the underside of the inverter.



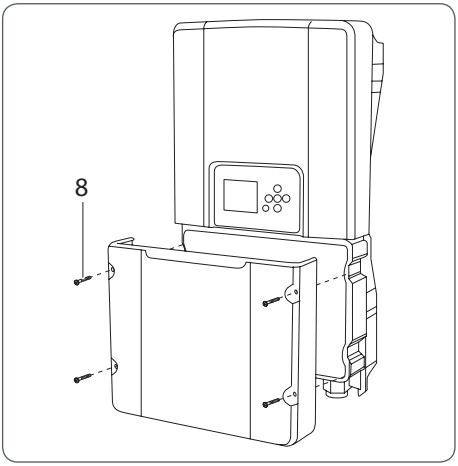
2. Guide the locking clamp (7) through the fastening clamp.
3. Insert the padlock through the eyelet on the locking clamp and lock.

3.4 Connection

3.4.1 Preparatory work



1. If present, disconnect the DC voltage side with the external disconnect device from the solar generator.
2. If present, move the switch knob of the DC isolator on the underside of the device to the **0** position.



Take off the lower cover

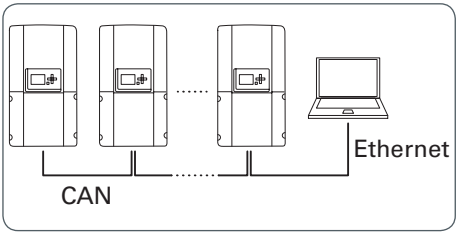
➞ Remove the four screws (8) from the lower cover and take off the cover.

For safety reasons, it is ESSENTIAL that the following sequence is ALWAYS followed when the connections are established:

1. Connect the network.
2. Connect the AC voltage.
3. Configure the grounding of the PV modules.
4. Mount the lower cover.
5. Connect the DC voltage.

3.4.2 Network connection

The inverter is equipped with two different network connections:



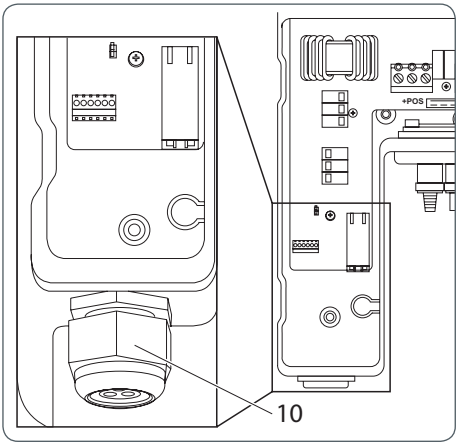
- **CAN:** for communication between multiple inverters
- **Ethernet:** for communication between the integrated web server of the master and a computer or the internet

Up to 30 PLATINUM H inverters can be connected into a network with an overall length of up to 100 m.

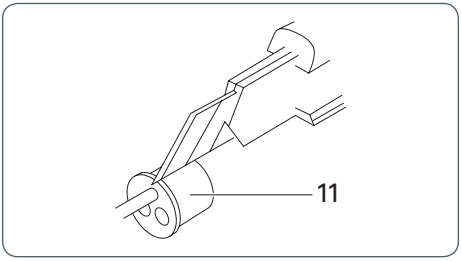
Network cable

- **CAN**: cross-section 0.21 mm², max. 100 m
- **Ethernet**: CAT 5 shielded twisted-pair cable with pre-assembled RJ45 plugs

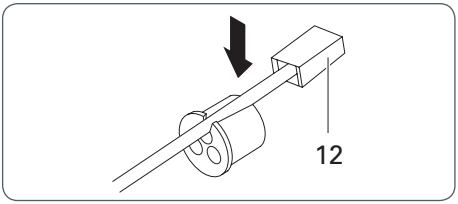
Connect



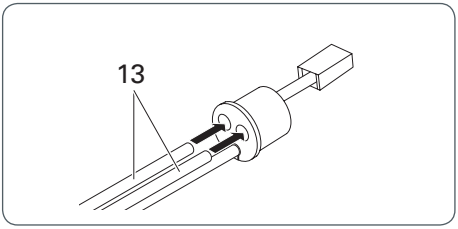
1. Unscrew the network screw connection (10) from the left-hand underside of the inverter.
2. Take out the three-way screwed cable connection insert.



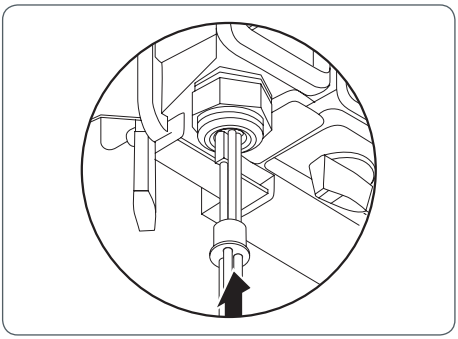
3. If required, cut open the cable insert (11) to a width of around 1 mm for the Ethernet cable.



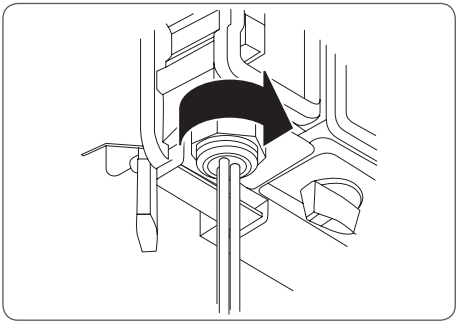
4. Insert the Ethernet cable (12) in the cable insert.



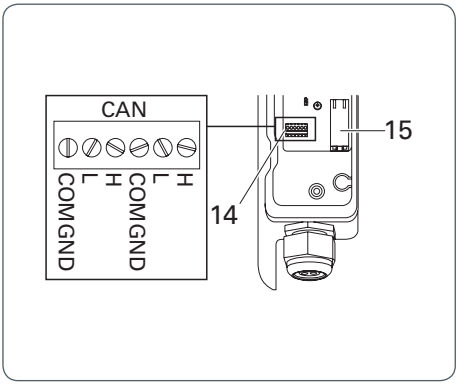
5. Route the CAN cable (13) through the bore(s) in the cable grommet.



6. Feed all network cables into the housing from below.



7. Tighten the network screw connections.

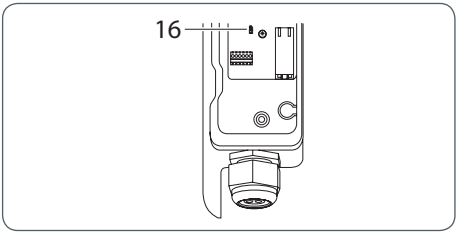


8. Connect the CAN cable to the terminal block (14). When doing this, make sure that the lines L and H are not accidentally swapped over during connection.
   - Incoming line: left-hand terminals L and H
   - Outgoing line: right-hand terminals L and H
9. At the master inverter, connect the plug of the Ethernet cable with the lug facing towards the rear into the socket (15).

Termination

Termination via an internal terminating resistor ensures correct operation of the network. This is done by means of a jumper, which lies across the CAN terminal block and short-circuits two pins.
No jumper is fitted at the factory, so the terminating resistance is not activated.
The terminating jumper is included with the supplied installation materials.

Inverters in the network	Jumper position	Meaning
Individual (standalone) inverter	Jumper inserted	Terminating resistance activated
First/last inverter in the network	Jumper inserted	Terminating resistance activated
All other inverters in the network	No jumper	Terminating resistance de-activated



1. At each inverter, check that the jumper (16) is in the correct position (in accordance with the table above).
2. If not, correct the jumper position accordingly.

3.4.3 Connect the AC voltage

DANGER
Risk of death due to high AC voltage!

- ▶ Switch off the mains voltage supply (AC side) before connecting the inverter (safety device).
- ▶ Make sure that the central isolation device can be accessed freely.
- ▶ Only connect the inverter to TN or TT networks (see IEC 60364-1) with 230 V.
- ▶ Observe max. fuse protection permitted on the AC voltage side; see "Technical data" on page 86.
- ▶ Establish the AC voltage connection with a circuit breaker. PLATINUM recommends a type C miniature circuit breaker.
- ▶ If an external residual current protective device is required, PLATINUM recommends using a residual current protective device (RCD) of type A.

CAUTION
Destruction of the inverter!

- ▶ Never connect inverters between two phases.
- ▶ Never mix up the phases with PE or N.
- ▶ If several inverters are connected, distribute them across the three phases so that the differences in feed-in power between the phases do not exceed the maximum permitted unbalanced load of the grid operator.

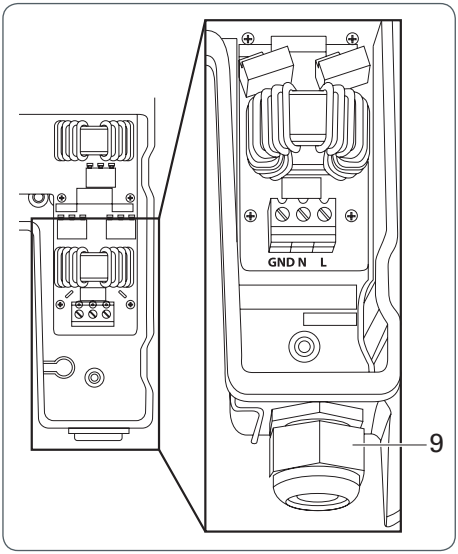
Prepare the connection cable for the AC voltage

Dimensioning the wire cross-section is the responsibility of the electrician and depends on the cable length and installation situation.
- Min. cross-section 6 mm²
- Max. cross-section 16 mm²

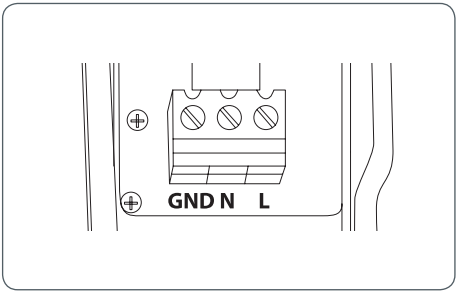
1. Protect the AC voltage connection lines with appropriate fuses; see "Technical data" on page 86.
2. Strip 18 mm of insulation from the AC voltage connection lines and add wire-end sleeves.

Connect

The AC connection screw fitting does not have a seal. One of the supplied seals must be used to ensure that the requirements for safety class IP65 are met.



1. Unscrew the AC screw connection (9) from the right-hand underside of the inverter.
2. Route the prepared AC voltage connection line through the AC screw connection. Use a seal if required.
3. Feed the AC voltage connection line into the housing from below.
4. Tighten the AC screw connection.



5. Connect the AC voltage connection cable to the inverter:

Terminal	Assignment
GND	Protective ground conductor
N	Neutral conductor
L	Feed-in phase

6. Tighten the terminals with a tightening torque of 1.5 Nm.

3.4.4 Configuration of the grounding of the PV modules

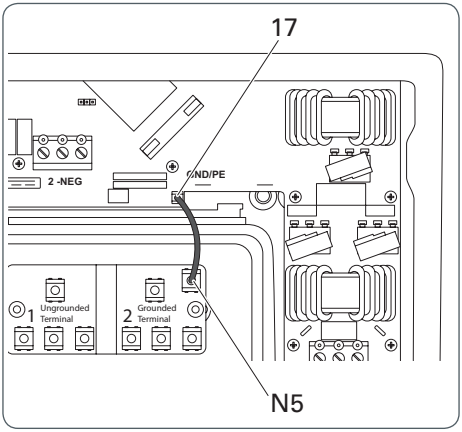
The inverter meets all requirements in terms of technical safety.
Depending on the grounding of the connected PV modules, the following work may need to be carried out on the inverter:

Grounding of the PV modules	Inverter setup
Not grounded	Factory setup No further grounding measures required
Negative grounding	▪ Install grounding strap ▪ Connect grounding jumper
Positive grounding	▪ Install grounding strap ▪ Connect grounding jumper ▪ Swap internal cables

Install grounding strap

WARNING
Risk of electric shock and damage to the inverter.
► Only install the grounding strap on grounded PV modules.

The grounding strap is included in the enclosed grounding kit.

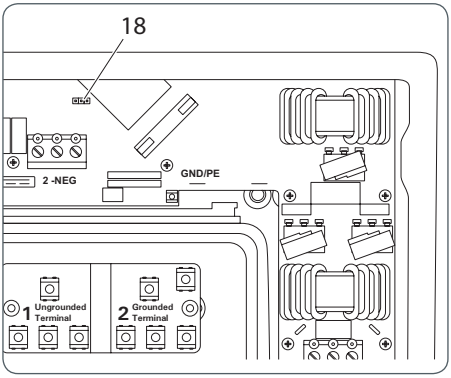


→ Connect the grounding strap between the DC grounding terminal (17) and N5.

Connect grounding jumper

WARNING
Risk of electric shock and damage to the inverter.
► Only install the grounding jumper on grounded PV modules.

The grounding jumper is included in the enclosed grounding kit.



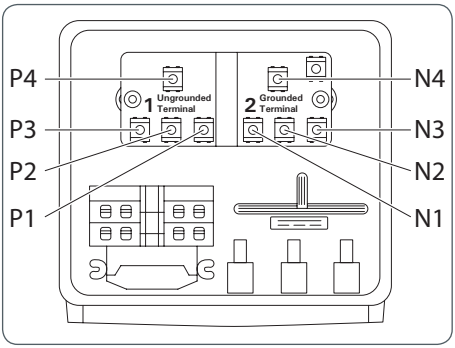
→ Plug in the grounding jumper at the connector (18) (according to the grounding of the PV modules):

– Not grounded	No jumper
– Positive grounding	Pin 1 and pin 2
– Negative grounding	Pin 2 and pin 3

Swap over the internal cables if the PV modules are positively grounded

WARNING
Risk of electric shock and damage to the inverter.
- ▶ Only swap over the internal cables if the PV modules are positively grounded.

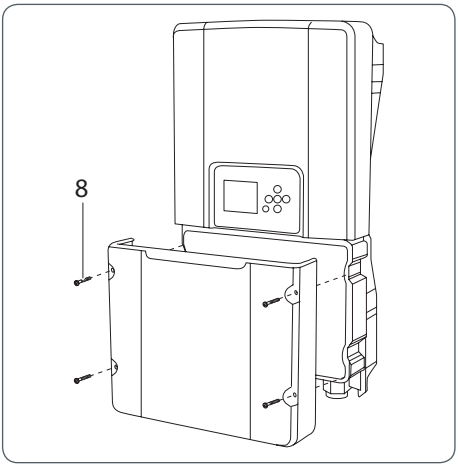
At the factory, black cables are assigned to the connections N1 to N4 and red cables to the connections P1 to P4. In the case of negatively earthed PV modules, this assignment needs to be swapped over.



→ Swap over the cables at the following connections (swap red and black):

- N1 and P1
- N2 and P2
- N3 and P3
- N4 and P4

This concludes the work inside the inverter. The lower cover can be closed again.



→ Attach the lower cover with the four screws (8).

3.4.5 Connect DC voltage

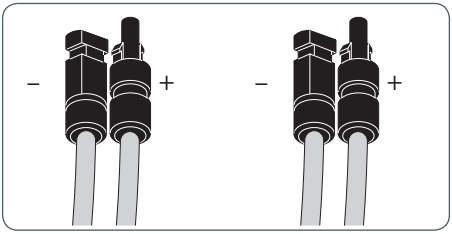
DANGER
Risk of death due to high DC voltage! A voltage is present at the PV modules when it is bright.

- ▶ Before connecting the inverter, check whether voltage is applied to the generator's DC voltage connection.
- ▶ Before connecting the inverter, check whether the polarity of the DC voltage is correct.
- ▶ If voltage is applied, wear insulating protective clothing and face protection.
- ▶ Ensure that the cable plug has engaged completely with the socket.
- ▶ Detach the DC voltage cable only if the inverter is not in operation.
- ▶ Make sure that the DC isolator or a central isolation device can be accessed freely.

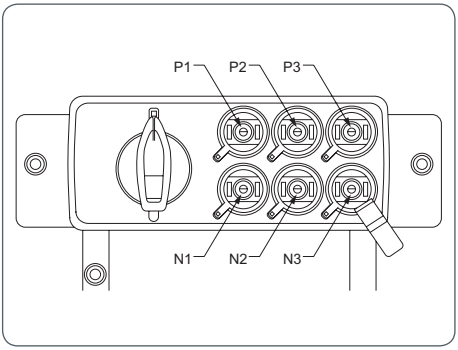
WARNING
Risk of electric shock and damage to the inverter and/or PV plant!

- ▶ Use only the original DC voltage Multi-Contact MC4 cable plug.
- ▶ Only connect PV modules that meet the requirements of IEC 61730 class A.
- ▶ Ensure that the max. DC voltage permitted is not exceeded.
- ▶ Ensure that the max. direct current permitted per string is not exceeded.
- ▶ Make sure that the lower cover is closed before making the DC voltage connection.

If more than one string is connected, make sure that the quantity and type of solar modules and the voltage of strings to be connected in parallel are the same.



1. Fit original Multi-Contact MC4 connectors to each string of the DC voltage cable. Make sure that the polarity is correct here.

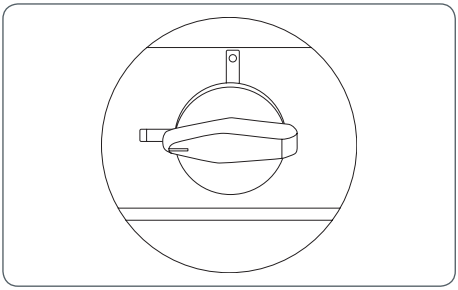


2. Take off the protective caps from the required DC voltage connections.
   - String 1: Connections N1 and P1
   - String 2: Connections N2 and P2
   - String 3: Connections N3 and P3
   - (N = negative, P = positive)
3. Connect the prepared DC voltage connectors to the DC voltage connections. In the process, make sure that the connectors lock in place correctly.

Fit protective caps to plug connectors that are not used on the inverter.

4 Placing into operation

4.1 Switching on



1. Switch on mains voltage supply (safety device).
2. Switch on the DC voltage via the DC isolator on the underside of the device or via the external isolation device.

The **Start installation?** prompt appears on the display. **Cancel** is highlighted.

3. Use the ▷ key to select **OK**.
4. Press the ↵ (OK) key to start the installation.

4.2 Navigation in the Installation Menu

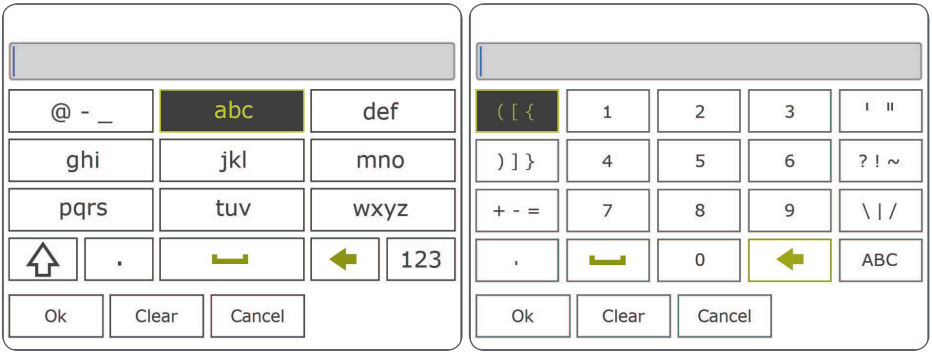
4.2.1 Key functions

The following keys are available for navigation in the Installation Menu

Key	Function	Key	Function
△	▪ Scroll up ▪ Increase value	▷	▪ Navigate one page or value to the right
▽	▪ Scroll down ▪ Reduce value	↵	▪ Select option ▪ Go to next level
◁	▪ Navigate one page or value to the left	×	▪ Cancel operation ▪ Return to previous menu item

4.2.2 (Alpha)numerical keypad

In some menus, a keypad containing letters or numbers is displayed so that the user can input alphanumerical text:



Key	Function	Key	Function
⇧	▪ Capital/lower case letters	OK	▪ Confirm entry and exit
.	▪ Dot/decimal point	Clear	▪ Delete entire entry
␣	▪ Space	Cancel	▪ Exit entry without saving
←	▪ Delete last character	123	▪ Switch to number keypad
		ABC	▪ Switch to letter keypad

Text entry

1. If the required input field is highlighted yellow (e.g. Customer name), press the ↵ (OK) key to open the on-screen keypad.
2. Use the arrow keys ▽/△ and ◁/▷ to select the required letter or number field.
3. Press the ↵ (OK) key several times as required until the correct character is displayed in the text window (top row) (this works in a similar way to the buttons on a mobile phone).
4. Repeat steps 1 and 2 for the remaining characters.
5. Once the entry is complete, press the **OK** key on the on-screen keypad to close the keypad.

A maximum of 19 characters can be displayed in the text window.

Text can be easily entered at the PC keyboard via the integrated web server.

4.3 Installation Menu

- To transfer all settings correctly, the Installation menu needs to be run through once in full.
- When multiple inverters that are networked with each other via the CAN network are installed, one inverter can be configured as the master and the others as slaves. For this to be possible, all inverters in the network must be switched on.
- If the inverter is configured as a master (see section 4.3.5), it will automatically transfer the settings to the remaining inverters in the CAN network.
- Every inverter is automatically allocated an ID number during initial operation. This number can be changed and freely assigned in a further step.
- The inverters on which no data is entered display different screen content depending on the menu. If data cannot be entered, the inverter displays the start screen.
- During initial operation, all inverters connected to the CAN network are disabled.
- The configuration process cannot be performed if the DC voltage is missing or too low.

4.3.1 Overview

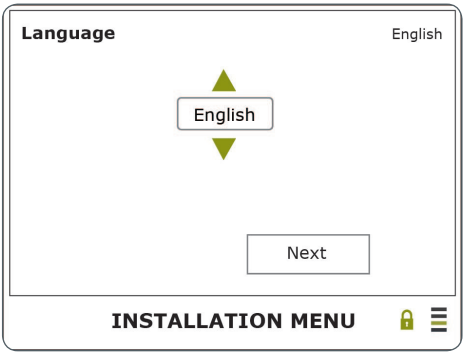
The Installation Menu contains the following menu items:

- Start installation
- Language
- Date *
- Time *
- Bus ID (RS485, can be skipped)
- Configure as master
- Country setting/grid code **
- Screen lock
- Customer name
- Site
- Message 1 / Message 2
- Owner password

* Changing the date and time can cause saved data to be overwritten or lead to gaps in data logging.
During initial operation, the date and time must be entered completely and correctly once.
** The country setting can only be changed for the first 5 hours after feed-in starts. After this, the menu is no longer accessible for the owner.

4.3.2 Selecting the language

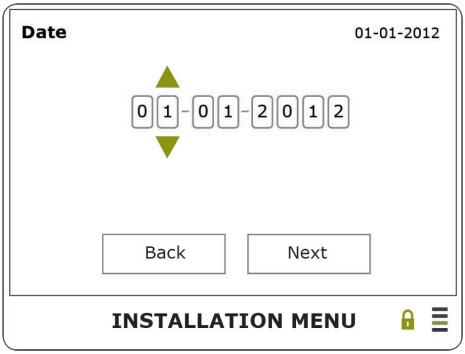
Once the Installation Menu has been launched, the currently selected language is displayed.



1. Press ↵ (OK) to call up the menu.
2. Use the arrow keys ▽/△ to select the desired language.
3. Press ↵ (OK) to confirm the language selection.
4. Use the ▷ key to select **Next**.
5. Press ↵ (OK) to confirm **Next**.
   The user interface is then displayed in the chosen language.

4.3.3 Setting the date

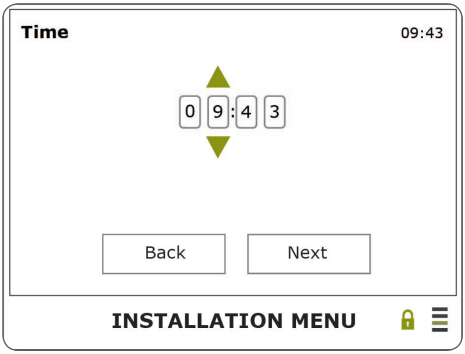
The currently set date is displayed.



1. Press ↵ (OK) to call up the menu.
2. Use the arrow keys ▽/△ and ◁/▷ to enter the current date in the format DD-MM-YYYY.
3. Press ↵ (OK) to confirm the changed date.
4. Use the ▷ key to select **Next**.
5. Press ↵ (OK) to confirm **Next**.

4.3.4 Setting the time

The currently set time is displayed.

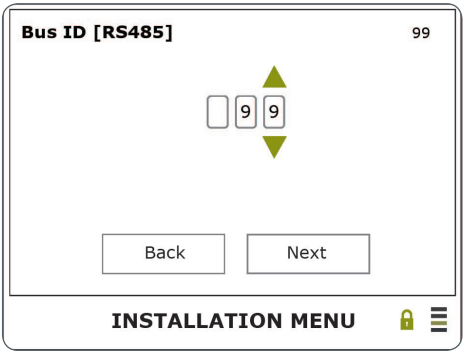


1. Press ↵ (OK) to call up the menu.
2. Use the arrow keys ▽/△ and ◁/▷ to enter the current time using the 24-hour clock.
3. Press ↵ (OK) to confirm the changed time.
4. Use the ▷ key to select **Next**.
5. Press ↵ (OK) to confirm **Next**.

Changing the date and time can cause saved data to be overwritten or lead to gaps in data logging.
During initial operation, the date and time must be entered completely and correctly once.

4.3.5 Bus ID (RS485)

You can skip this step if you have a CAN network.



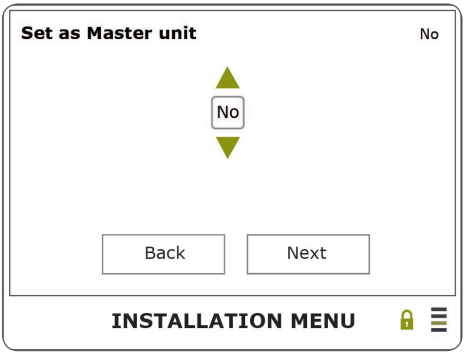
1. Use the ▷ key to select **Next**.
2. Press ↵ (OK) to confirm **Next**.

4.3.6 Master/Slave

- When multiple inverters that are networked with each other via the CAN network are installed, one inverter can be configured as the master and the others as slaves. For this to be possible, all inverters in the network must be switched on.
- The master inverter automatically transfers the setting values to the other inverters via the CAN network.
- A CAN network can comprise one master and up to 29 slaves.

PLATINUM recommends a slave configuration for standalone inverters.

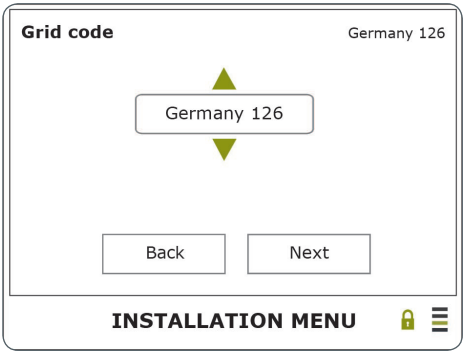
The current status (Master Yes/No) is displayed.



1. Press ↵ (OK) to call up the menu.
2. Use the arrow keys ▽/△ to select Yes/No.
3. Press ↵ (OK) to confirm the revised setup.
4. Use the ▷ key to select **Next**.
5. Press ↵ (OK) to confirm **Next**.

4.3.7 Country setting / Grid code

The currently set country is displayed.



1. Press ↵ (OK) to call up the menu.
2. Use the arrow keys ▽/△ to select the required country.
3. Press ↵ (OK) to confirm the revised setup.
4. Use the ▷ key to select **Next**.
5. Press ↵ (OK) to confirm **Next**.

CAUTION

No inverter operation, or malfunction of the inverter!

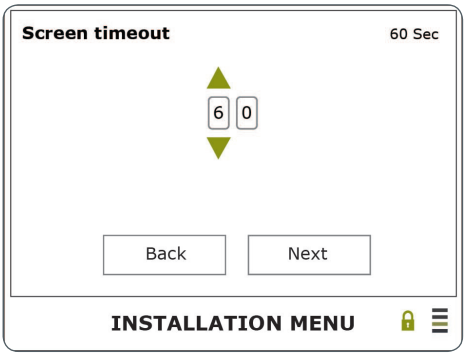
▶ Make sure that the selected country is actually correct for the installation site. Otherwise it may be impossible to operate the inverter, or its operation may contravene local and national regulations because incorrect threshold values are used.

- Depending on the selected country, there may also be further queries (e.g. relating to power derating). Input the settings in accordance with the requirements of the grid operator.
- The country setting can only be changed for a period of 5 hours after initial operation and feed-in starts. After this, the menu is no longer accessible for the owner.

4.3.8 Screen lock

If no user operation is performed on the inverter, the background illumination is automatically switched off after the set waiting time.
Factory setting: 60 seconds
Possible settings: 0, 30 ... 99 seconds
If the setting **0** is selected, the background illumination remains activated at all times.

The value currently set for the display timeout is displayed.



1. Press ↵ (OK) to call up the menu.
2. Use the arrow keys ▽/△ to choose the required timeout duration.
3. Press ↵ (OK) to confirm the revised setup.
4. Use the ▷ key to select **Next**.
5. Press ↵ (OK) to confirm **Next**.

4.3.9 Customer name / Site / Message 1 / Message 2

Every inverter in the network can be identified using the following data:

Customer name	Name of the operator
Site	Site of the inverter or plant
Message 1 / Message 2	Data fields for additional identification information

The data entry method is the same in all four fields.

Customer Name / Site / Message 1 / Message 2 is displayed.

1. Press ↵ (OK) to call up the menu.
2. Press the ↵ (OK) key again to display the on-screen keypad.
3. Enter the required text (max. 19 characters).
4. Press the **OK** key on the on-screen keypad when the entry is complete.
5. Use the ▷ key to select **Next**.
6. Press ↵ (OK) to confirm the entry.
7. Press ↵ (OK) to confirm **Next**.

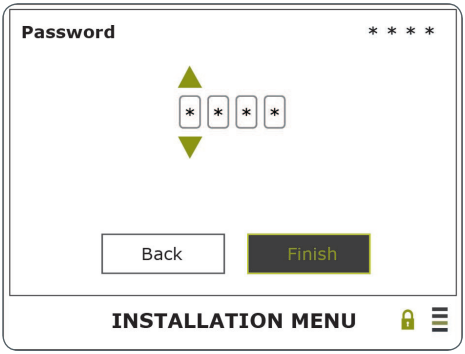
4.3.10 Owner password

CAUTION
Risk of unauthorised manipulation of the inverter!

▶ Do not leave the owner password in its default setting – make sure you change it to a different 4-digit value.

The owner password needs to be changed on every inverter. This information is not transmitted from the master to the slaves.

The password is displayed as " **** ".



1. Press ↵ (OK) to call up the menu.
2. Use the arrow keys ▽/△ and ◁/▷ to change the password.
3. Press ↵ (OK) to confirm the changed password.
4. Use the ▷ key to select **End**.
5. Press ↵ (OK) to confirm **End**.

4.3.11 Final checks

The installation has been successfully completed if the operation display comes on and only the green LED is lit up.

Final checks in a network

Check the following at every inverter in the network:

- Only the green LED is on.
- All of the inverters in the network have the same country settings (including further country-specific settings).

Proceed as follows in the event of faults in the network:

- Perform a network scan to determine how many inverters have been recognised in the network (Commands –> Plant Commands –> Reset Number of Inverters).
- Check the CAN connection.
- Check the jumper settings.
- Repeat the installation process if necessary.

Repeat the network scan after every test step until the number of detected inverters matches the actual number present in the network.

4.4 Commissioning after replacement of a device

4.4.1 After replacement of a slave

The master inverter automatically detects the replacement and takes the new device into operation as a slave. The device number is retained.

4.4.2 After replacement of the master

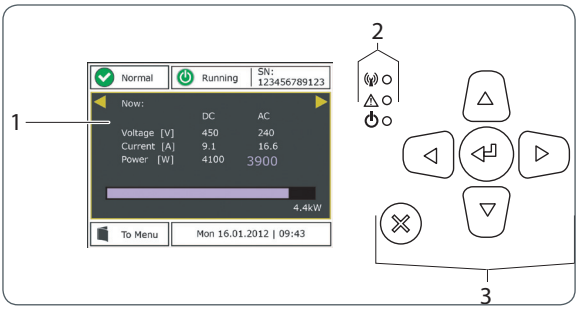
If the inverter that has been replaced is a master and master functionality is required on this inverter (e.g. connection to the internet via this inverter), proceed as follows:

1. Temporarily reconfigure one of the existing inverters as the master inverter.
2. Take the new inverter into operation in the network as a slave. In the process, the settings are copied from the temporary master.
3. Configure the new inverter as the master. The temporary master then reverts to slave status. The new master has the same settings as the old one.

5 Operation of the inverter

In normal operation, the inverters operate fully automatically, so no manual interventions are required for the feed-in into the grid.

5.1 Control elements and displays



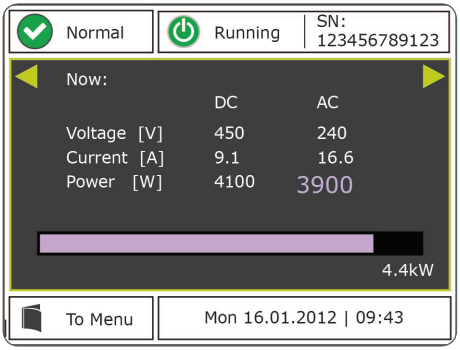
(1) Operation display (see following pages)
(2) LEDs
(3) Navigation keys (see Page 23)

Meaning of the LEDs

Symbol	Colour	Meaning	Action
	Red	▪ Fault Inverter is in shutdown mode.	→ Check alarms
	Yellow and Green	▪ Caution Inverter is still running, but only with limited functions.	→ Check warning messages
	Green	▪ Normal operation Inverter is feeding electricity into the grid.	–
–	–	▪ Inverter is switched off. (Power < 7 W)	–

5.2 Operation display

5.2.1 Start screen



(1) Status bar
(2) Operation display: '**Now**'
(3) To the main menu
(4) Date and time

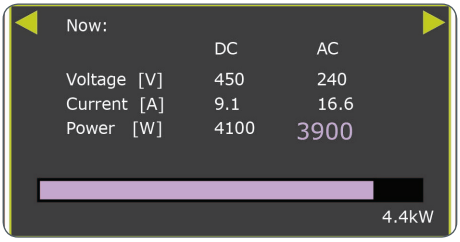
- The start screen is always displayed if no button has been pressed for 1 minute.
- If a screen saver is activated (blank screen), any button can be pressed to display the start screen.

5.2.2 Navigation from the start screen

▽/△ Switch between main display and status bar / call menu

◁/▷ Switch between time periods **Now**, **Today**, **Month**, **Year** and **Plant overview**

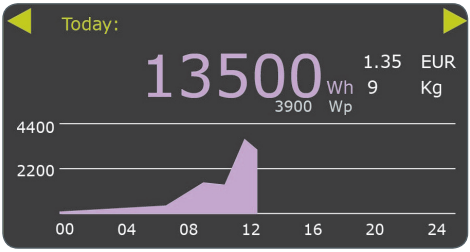
5.2.3 Operation display – 'Now'



- The values for current, voltage and power for the PV plant (DC) and the feed-in (AC) are displayed numerically.
- The current power is displayed as a bar graph (0 ... nominal power).

5.2.4 Operation display – 'Today'

The following values are displayed in this screen:

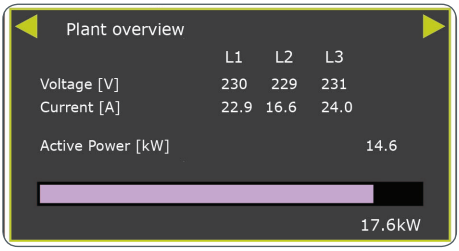


- Today's yield in Wh and as a graphical representation
- Today's peak power in Wp
- Feed-in rebate generated today in EUR
- CO_2 emissions avoided today in kg

- The values displayed by the inverter may differ from those displayed on calibrated electricity meters.
- The operation displays **Month** and **Year** show the same values relating to the affected period.

5.2.5 Operation display – 'Plant overview'

The following values are displayed in this screen:



- Voltage and current at the three feed-in phases
- Current total power as a value and bar graph (0 ... nominal power)

5.2.6 Status bar

Status | Operating mode | Serial number

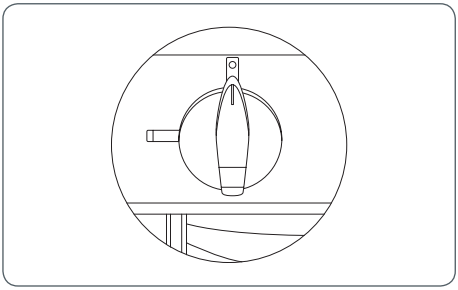
Status displays and operating modes are also indicated by the LEDs.

Status display	Meaning	LED
	Normal; Inverter is operating with no warnings or alarms.	Green
	Warning; Inverter is still running, but only with limited functions.	Yellow Green
	Alarm; Inverter is in shutdown mode, an alarm is present.	Red
Operating mode	**Meaning**	**LED**
	Sleep mode; Automatic shutdown, input power level is insufficient.	Yellow
	Startup; Initialisation of input values and network conditions	Yellow Green
	Operation; Electricity is fed into the grid.	Green
	De-rating; Output power is reduced to prevent the inverter from overheating.	Yellow Green
	Close down; Inverter is in shutdown mode.	Yellow
	Shutdown; Inverter/system fault or unstable operating conditions	Red
	Service; Inverter can be manually overwritten.	Yellow

5.3 Isolation from the generator field

On devices with a DC power switch

The DC isolator on the underside of the device allows the solar generator to be switched on and off.



Position **0**: Solar generator switched off
Position **1**: Solar generator switched on

- PLATINUM recommends activating the DC isolator once a year to prevent the contacts from fusing together.
- PLATINUM recommends operating the DC isolator when the power is at its lowest (during the night or late in the evening).

On devices with no DC power switch

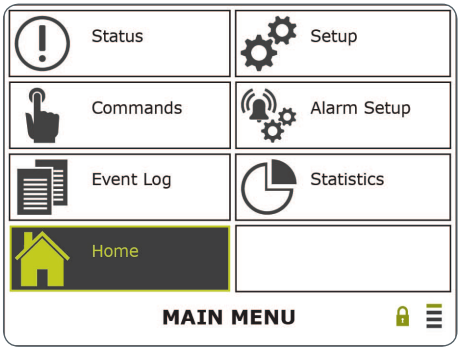
→ Disconnect the DC side from the solar generator using the external isolation device.

6 Menu on the inverter

6.1 Menu operation

6.1.1 Call up menu

1. In the start screen, use the ▽ key to switch to the bottom display line.
   The 'Menu' field is highlighted, the rest of the screen is greyed out.
2. Press ↵ to call up the menu.
   The main menu is displayed.



3. Use the navigation keys to select the required menu and confirm by pressing ↵.

6.1.2 Exiting the menu

1. Keep pressing the × key until the main menu appears.
2. Exit the main menu by pressing **Back**.
   The start screen is displayed.

6.1.3 Navigation keys

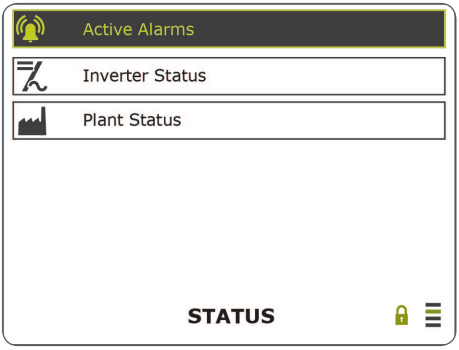
Key	Function	Key	Function
△	▪ Scroll up ▪ Increase value	▷	▪ Navigate one page or value to the right
▽	▪ Scroll down ▪ Reduce value	↵	▪ Select option ▪ Go to next level
◁	▪ Navigate one page or value to the left	×	▪ Cancel operation ▪ Return to previous menu item

6.2 Menu tree

Status	Active alarms	
	Inverter status	Input parameters, output parameters, inverter, peak power value, energy today, temperature, isolation resistance, operating hours
	Plant status	
Setup	General setup	Language, date and time, password, CO_2 rate, yield rate, yield currency
	Network setup	IP address, subnet mask, gateway, master, setting
	Inverter setup	Model, serial number, SW version numbers, HW version numbers etc.
	Plant setup	Company/customer name, site, date of installation, maintenance date, area of responsibility, device name, message, apparent power of plant
	Grid configuration	Country, country code etc.
Commands	Inverter commands	Energy Log, Data Log, Web Administrator Account
	Plant commands	Energy Log, Data Log, Total Number of Inverters
Alarm setup	Notification Setup	User name, password, sender e-mail address, recipient e-mail 1, recipient e-mail 2, SMTP server
	Inverter alarms	Time of notification, time interval, sending etc.
	Portal setup	FTP server ID, user name, password, SMTP port 2
Event Log		
Statistics	Inverter	
	System	

Menu settings can also be input via the web server; see chapter 7.

6.3 Status menu



6.3.1 Status –> Active Alarms

This menu shows detailed information about warnings and alarms that are displayed at the top left in the status bar during operation.
The alarm messages are listed in section “Event Log” on page 75.

6.3.2 Status –> Inverter Status

This menu shows the operating mode, operating parameters and any faults that are present on the inverter.

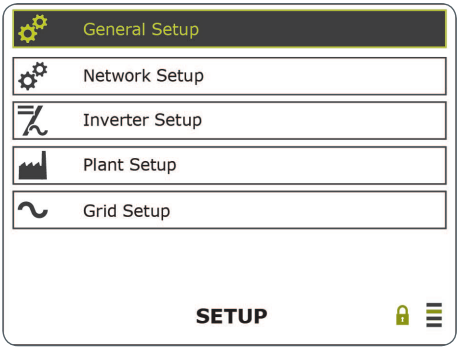
Parameters	Meaning
Input parameters	▪ Values from the PV modules to the inverter: current, voltage and power
Output parameters	▪ Feed-in values from the inverter to the grid: current, voltage and power
Inverter, peak power value	▪ Highest power value attained on this day
Energy today	▪ Total energy yield during the course of the day
Temperature	▪ Temperature inside the inverter
Insulation resistance	▪ Safe insulation value for the avoidance of injuries and plant damage
Operating hours	▪ Total running time of the inverter since it was first taken into operation

6.3.3 Status –> Plant Status

This menu shows the operating mode, status and operating parameters of the plant.

Parameters	Meaning
Plant mode	Operating mode is displayed. For details of possible operating modes, see section 5.2.6.
Plant status (faults)	Plant status is displayed. For details of possible statuses, see section 5.2.6.
Number of inverters	Total number of inverters in the plant
Number of active inverters	Total number of active inverters in the plant
Number of inverter alarms	Number of event alarms in the plant
Number of inverter warnings	Number of event warnings in the plant
Input current	Total current from the PV modules to the inverters
Input power	Total power from the PV modules to the inverters
Output current	Total grid feed-in current from all active inverters
Output voltage	Total grid feed-in voltage from all active inverters
Output power	Total grid feed-in power from all active inverters
Energy today	Total energy production of the plant today

6.4 Setup menu



6.4.1 Setup –> General Setup

This menu shows some of the general parameters of the inverter.
These parameters can be changed with the owner password.

Parameters	Meaning
Language	▪ The preferred language is defined during installation.
Date and time	▪ The date and time are set during the installation.
Password	▪ Owner password; factory setting: 0003
CO_2 rate	▪ Avoided CO_2 emissions, based on 0.7 kg/kWh
Yield rate	▪ Feed-in rebate in the relevant country
Yield currency	▪ Currency in the relevant country (3 characters)

6.4.2 Setup –> Network Setup

This menu shows the settings for the connected Ethernet network, see also section "Connection between inverter and computer" on page 58.
These parameters can be changed with the owner password.

Parameters	Meaning
IP address	▪ Unique network address for the inverter
Subnet mask	▪ Sub-network address; first part of the IP address
Gateway	▪ Network transmission to a different network
Master setting	▪ If multiple inverters are connected to each other, one of the inverters must be configured as the master and all the others as slaves

6.4.3 Setup –> Inverter Setup

This menu shows the basic data of the inverter. These data are set at the factory and cannot be changed.

You will need to have these data available for service situations.

Parameters	Meaning
Model	▪ Inverter model
Serial number	▪ Unique identification for every inverter, also to be found on the type plate
Part number	▪ Identification for every inverter hardware configuration within PLATINUM
Version	▪ Unique version name for tracking the development of different inverter versions within PLATINUM
GUI software part no.	▪ GUI = Graphical User Interface ▪ The GUI enables interaction with the inverter via the display.
GUI software version	▪ Version of the GUI software
GUI hardware part number	▪ Identification for the GUI card hardware

Parameters	Meaning
GUI hardware version	▪ Version number of the GUI hardware
SW1 part number	▪ Part number of the DSP1 software ▪ (DSP1 = Digital Signal Processing) ▪ The DSP microprocessor is used to control the energy conversion in the inverter.
SW1 version	▪ Version number of the DSP software
Part number of the control board	▪ Part number of the DSP card
Version of the control board	▪ Version designation for the DSP control hardware
Part number of the main board	▪ Identification for the main board; all of the components and subsystems of the inverter are mounted on the main board.
Version of the main board	▪ Unique version number for tracking the development of the different main board versions
SW2 part number	▪ Part number of the DSP2 software
SW2 version	▪ Version number of the DSP2 software

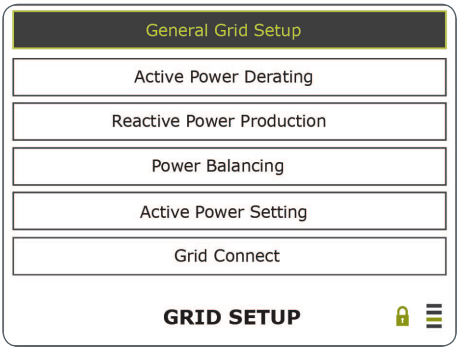
6.4.4 Setup –> Plant Setup

This menu displays useful information about the PV plant. The owner password is required in order to change the information.

Parameters	Meaning
Company/customer name	▪ Name of the operator/customer
Site/site name	▪ Site (description)
Installation date	▪ Date of initial operation
Service date	▪ Date of last service
Area of responsibility	▪ Field for messages from the service personnel
Device name	▪ The inverter is displayed with this name in the list of inverters linked to the master device
Message	▪ Extra field for additional messages
Plant apparent power	▪ The product of voltage times current for the entire PV plant [kVA]

6.4.5 Setup –> Grid Configuration

This menu shows the settings for the grid based on the selected country.
This menu has the following submenus:



These parameters can be changed with the owner password for a period of 5 hours after feed-in to the grid starts.
Please contact the Service department if you need to make changes after this.

Setup –> Grid Configuration –> General Grid Setup

Parameters	Meaning
Grid code	▪ Grid code (country code) for the installation
Description	▪ Designation of the grid protection standards
Nominal grid voltage	▪ Nominal voltage of the local grid
Nominal grid frequency	▪ Nominal frequency of the local grid
Grid configuration	▪ Local grid configuration: TN/TT, IT, undefined
Feed-in	▪ Feed-in phase depending on the grid configuration TN/TT: No setting, L1, L2, L3 IT: No setting, L1-L2, L1-L3, L2-L3 Information If changes are made to the feed-in phase, the energy log for the plant will need to be re-created (see "Commands –> Plant Commands –> Re-create Plant Energy Log"). Only then are the feed-in phases correctly displayed in the "Plant Overview".
Voltage limit min	▪ Lower shutdown threshold for the local grid voltage
Voltage limit max	▪ Upper shutdown threshold for the local grid voltage
Voltage time limit min	▪ Shutdown time lower voltage limit
Voltage time limit max	▪ Shutdown time upper voltage limit
Frequency limits min	▪ Lower shutdown threshold for the local grid frequency
Frequency limits max	▪ Upper shutdown threshold for the local grid frequency
Frequency time limit min	▪ Shutdown time lower frequency limit
Frequency time limit max	▪ Shutdown time upper frequency limit
Average AC voltage for isolation	▪ Limit values for isolation, based on the average voltage over a specific time period, e.g. average voltage > 253 V AC over a period of 10 minutes

Setup –> Grid Configuration –>

This menu displays the limits for the effective power according to the selected grid standard.

Parameters	Meaning
Name	▪ Name of the grid standard for power derating
Enable	▪ Enables or disables power derating
Start frequency	▪ Frequency at which power derating starts
Isolating frequency	▪ Frequency at which power derating ends and the inverter is isolated from the grid
Slope	▪ Slope of the effective power curve in %/Hz
Recovery rate	▪ Recovery rate of the inverter in %/min

Setup –> Grid Configuration –> Reactive PowerYield

This menu displays the method for monitoring the reactive power generation according to the selected grid standard.

Parameters	Meaning
Name	▪ Name of the grid standard for reactive power
Method	▪ Method for feeding in reactive power: – Deactivated – CosPhi(P), based on characteristic curve – CosPhi (fixed)
PF Setpt	▪ Fixed power factor value, Only for CosPhi (fixed) method
Number of points	▪ Number of XY points used for the characteristic curve, with a max. of 8 points each, Only for CosPhi(P) method
PntX1 – PntX8	▪ X-point: Defines the percentage of the effective power Only for CosPhi(P) method Automatic adjustment based on the grid code
PntY1 – PntY8	▪ Y-point: Defines the CosPhi setting for each device Only for CosPhi(P) method Automatic adjustment based on the grid code

Setup –> Grid Configuration –> Power Balancing

This menu displays the power balancing between the phases according to the selected grid standard.

Parameters	Meaning
Name	▪ Name of the grid standard for power balancing
Enable	▪ Enables or disables power balancing
Imbalance limits	▪ Balancing of the power per phase: Maximum permitted imbalance limits in VA

Setup –> Grid Configuration –> Active Power Settings

This menu displays the settings for the effective power according to the selected grid standard.

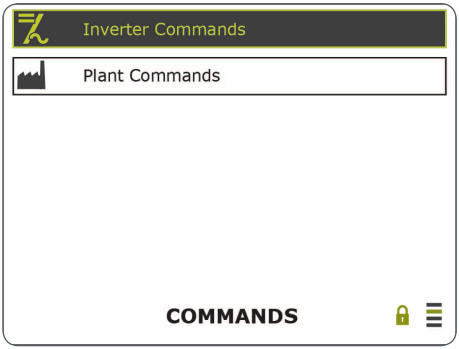
Parameters	Meaning
Name	▪ Profile name of the effective power settings
Enable – fixed	▪ Enable/disable fixed effective power limit
Eff. power setpt.	▪ Fixed effective power limit in W

Setup –> Grid Configuration –> Grid Connection

This menu displays the limits for reconnection of the inverter according to the selected grid standard.

Parameters	Meaning
Name	▪ Name of the grid connection standard
V_{AC} min. connection	▪ Minimum voltage for renewed grid connection
V_{AC} max. connection	▪ Maximum voltage for renewed grid connection
Connection min. frequency	▪ Minimum frequency for renewed grid connection
Connection max. frequency	▪ Maximum frequency for renewed grid connection

6.5 Commands menu



6.5.1 Commands –> Inverter Commands

This menu is used to display the results collected in the datalogger.

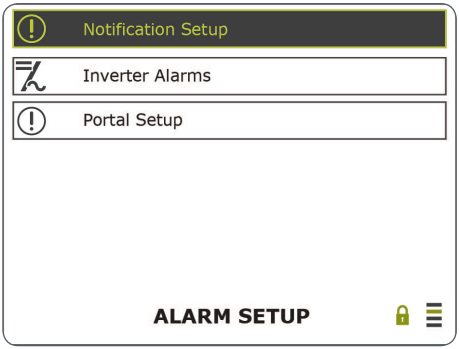
Parameters	Meaning
Delete Energy Log	▪ Deletes the entries in the energy log and the cumulative values of the inverter
Delete Data Log	▪ Deletes the 15-minute average power values of the inverter
Reset Web Administrator Account	▪ Resets the administrator password to "Admin"
Self-test	▪ Starts the self-test (Italy only)
Self-test result	▪ Displays the results of the last self-test (Italy only)

6.5.2 Commands –> Plant Commands

This menu is used to display the results collected in the datalogger.

Parameters	Meaning
Delete Energy Log	▪ Deletes the entries in the energy log and the cumulative values of the plant
Delete Data Log	▪ Deletes the 15-minute average power values of the plant
Reset Total Number of Inverters	▪ Updates the total number of inverters when inverters are added or removed
Re-create Plant Energy Log	▪ Re-creates the energy log of the plant based on the energy logs of the inverters that are currently connected and being operated in the system. This process may take several minutes. It requires that all of the inverters in the plant are in operation.

6.6 Alarm Setup menu



6.6.1 Alarm Setup –> Notification Setup

Setting for remote monitoring of notifications and alarms, including settings for the mail server, sender(s) and e-mail recipient(s)

Parameters	Meaning
User name	▪ E-mail user name
Password	▪ User password for the mail server
Sender e-mail address	▪ Valid e-mail address – required in order to send notifications
Receiver Email 1	▪ Address for the notification to recipient 1
Receiver Email 2	▪ Address for the notification to recipient 2
SMTP server	▪ Simple Mail Transfer Protocol server for the sending of e-mails
SMTP-Port 1	▪ Number of the SMTP port of the SMTP server Default setting: 25

Notes on e-mail settings

The SMTP server forwards the e-mails to the recipient.
Many companies have their own SMTP server, while private individuals generally use the SMTP server of their internet service provider (ISP).

If an inverter is moved or connected to a different network that is not operated by the same internet service provider (ISP), a new SMTP server will need to be assigned.

Please note

An ISP can change the SMTP IP address without prior notification.

→ If e-mail protocols suddenly cease, check whether the IP address has been changed.

6.6.2 Alarm Setup –> Inverter Alarms

Settings for the sending of notifications – What is sent when to e-mail addresses 1 and 2, and how frequently?

Parameters	Meaning
Notification time	▪ Time for sending the e-mail with production data (hours)
Notification time	▪ Time for sending the e-mail with production data (minutes)
Time interval	▪ Interval between two notifications in minutes
Send production on e-mail 1	▪ Sends the energy yield data to e-mail 1 at the indicated time
Send mode on e-mail 1	▪ Sends the operating mode changes to e-mail 1 (sent immediately)
Send alarm on e-mail 1	▪ Sends a warning or alarm to e-mail 1 (sent immediately)
Send production on e-mail 2	▪ Sends the energy yield data to e-mail 1 at the indicated time
Send mode on e-mail 2	▪ Sends the operating mode changes to e-mail 1 (sent immediately)
Send alarm on e-mail 2	▪ Sends a warning or alarm to e-mail 1 (sent immediately)

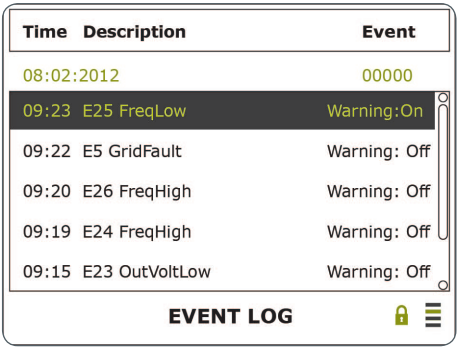
6.6.3 Alarm Setup –> Portal Setup

This menu shows settings for uploading data to the web portal.
Every hour, the average values for the energy data for 15 minutes at a time are uploaded.
This upload is not possible if no user name has been entered.
The portal settings are compatible with the Meteocontrol settings.

Parameters	Meaning
FTP server IP	▪ IP address of the FTP server
User name	▪ User name for the FTP server
Password	▪ Password for the FTP server
SMTP port 2	▪ The number of the SMTP port of the SMTP server for uploading e-mails to the portal Default setting: 25

Only a master inverter can upload data to the FTP server.
Additional costs may accrue for external FTP service offerings.

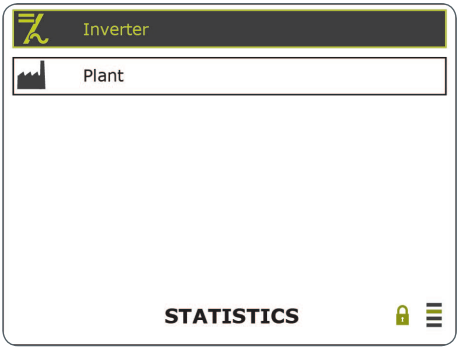
6.7 Event Log menu



This menu shows information about the events that have been logged by the inverter.
The events are listed in descending order.
The possible alarm messages are listed in section "Event Log" on page 75.

Warning: On Event has occurred
Warning: Off Event cancelled

6.8 Statistics menu



6.8.1 Statistics –> Inverter

This menu shows a summary of the key statistics of the inverter for 'Today' / 'Last month' / 'Last year' / 'Since startup'.

Parameters	Meaning
Energy	▪ Total energy yield of the inverter in kWh
Yield	▪ Earnings for the energy fed in by the inverter, e.g. in euro
Avoided CO_2 emissions	▪ CO_2 emissions avoided by the inverter in comparison to fossil fuels in kg
Peak power	▪ Highest instantaneous power of the inverter in W

6.8.2 Statistics –> Plant

This menu shows a summary of the key statistics of the plant for 'Today' / 'Last month' / 'Last year' / 'Since startup'.

Parameters	Meaning
Energy	▪ Total energy yield of the plant in kWh
Yield	▪ Earnings for the energy fed in by the plant, e.g. in euro
Avoided CO_2 emissions	▪ CO_2 emissions avoided by the plant in comparison to fossil fuels in kg
Peak power	▪ Highest instantaneous power of the plant in W

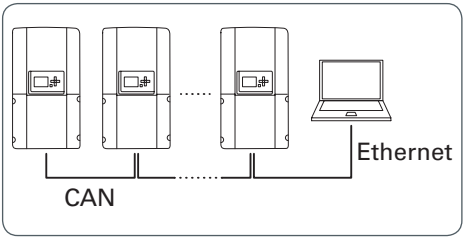
7 Web server

The inverter has an internal web server, which supplies detailed information about operation, warnings/alarms and the energy feed-in.

7.1 Connection between inverter and computer

The plant power can be monitored via a remote query from a computer. The connection between the inverter and the computer can be established either directly or via a network or the internet.

7.1.1 Direct connection



If multiple inverters are connected via a CAN bus, only the master inverter needs to be connected to the router/switch.

IP addresses

The IP addresses of the computer and inverter must be in the same area, i.e. the first eight digits of the IP addresses must be identical. If necessary, one of the IP addresses has to be changed (see below).

Example

IP address of the inverter: 192.168.10.x,
IP address of the computer: 192.168.10.y
Here, x and y must be different numbers between 1 and 254.

The default IP address set for the inverter is 192.168.10.20.

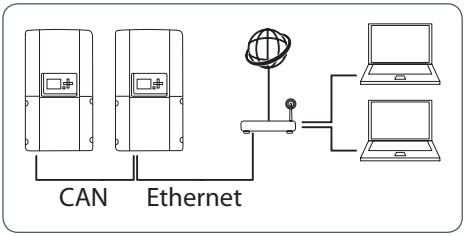
Changing the IP address of the inverter

→ Enter the desired IP address under **Setup** –> **Network Setup**.

Changing the IP address of the computer

→ Enter the following addresses in the network menu of the system controller:
- IP address: 192.168.10.10
- Subnet mask: 255.255.255.0

7.1.2 Connection via network/internet



If multiple inverters are connected via a CAN bus, only the master inverter needs to be connected to the router/switch.

With DHCP (Dynamic Host Configuration Protocol)

With DHCP, a router or switch generally distributes the required parameters such as IP address and subnet mask to the devices in the network.

1. Connect the (master) inverter and the router/switch to each other using a CAT5 Ethernet cable.
2. Under **Setup** –> **Network Setup** enter the IP address 000.000.000.000 and press ↵ (OK) to confirm.
   The router/switch assigns the network parameters automatically to the inverter. The inverter performs a restart.

Without DHCP (Dynamic Host Configuration Protocol)

Without DHCP, it is necessary to assign a unique address in the network that is not already in use to the inverter.

1. Connect the (master) inverter and the router/switch to each other using a CAT5 Ethernet cable.
2. Under **Setup** –> **Network Setup**, enter a unique IP address and press ↵ (OK) to confirm.
   The inverter performs a restart.

7.1.3 Access from the internet

Prerequisites

✔ A static IP address in the local network (with/without DHCP; see previous section) has been assigned to the inverter.

Setting up port forwarding in the local network router

Refer to the **Advanced Settings** for the router/switch.

- Port **80** of the router/switch must be forwarded to the static IP address of the inverter.
- The external IP address of the local network can be found under http://whatismyip.com.

If a dynamic IP address is assigned to the local network by your internet service provider (ISP), it is unlikely that the external IP address will remain constant for any length of time.
For this reason, it makes sense to have a free account set up at No-IP or another similar provider with a normal internet address for the local network.
To do this, the router needs to be capable of forwarding its IP address to the No-IP service.
If the router is unable to do this but has a dynamic IP address, the No-IP setting will need to be updated at regular intervals.

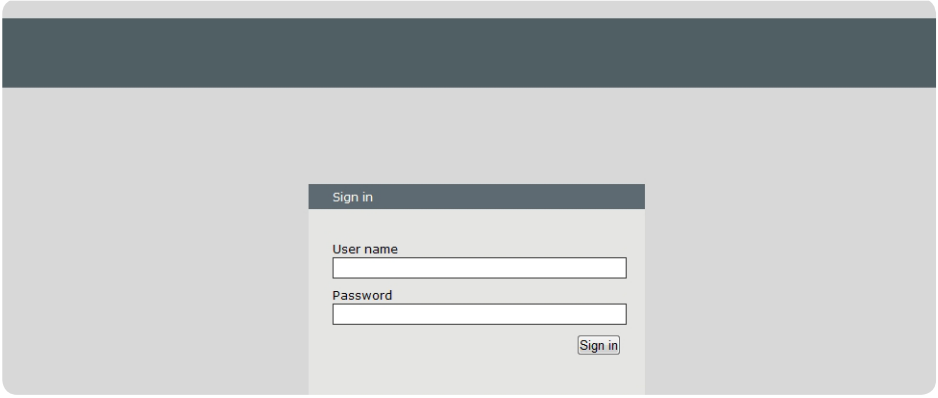
It should be possible to reach the web server of the inverter with these settings.

7.2 Starting the web server

The website is displayed optimally with Firefox 6.0 or Internet Explorer 8.0 (or later versions).

Establishing a connection to the inverter

1. Launch the browser and enter the internal or external IP address or web address of the inverter (when using No-IP or similar) in the address bar of the browser.
   The login screen is displayed.



2. **Enter the user name** and **password** and press **Sign in** to confirm.
   The home screen is displayed, see page 63.

- The following default access data are set up:
  - User name: admin
  - Password: admin
- It is absolutely essential that the user name and password are changed when the web server is connected to the internet.

7.3 Menu tree

Home	Plant/ inverter	System status	Status	Normal, Warning, Alarm
			Mode	Running, Inactive etc.
		Production status	Today, Month, Year	
Statistics	Plant	Last 7 days		
	Plant	Last 12 months		
Setup	GS Power Plant Information	Customer data	Customer name, site etc.	
		System data	Model, serial no. etc.	
	General setup	Date, time, CO_2 rate, earnings rate, earnings currency		
	Alarm setup	Notification setup	Address of sender and recipient	
		Inverter alarms	Time, alarms	
	Network	TCP/IP	Network IP address, network subnet mask, network gateway	
	User account	User account		
		Change password		
		Edit accounts		
Event log	Display	Events for the selected day		
Status	Plant	Alarms		
		Overview		
		Plant		
Help				
Logout				

7.4 Home

7.4.1 Menu bar

The web server offers the following menus:

Icon	Meaning	Icon	Meaning
	Home screen		Status
	Statistics		Help
	Setup		Logout
	Event Log		

→ Click the icon of the required menu in the menu bar.
The selected menu is opened.

7.4.2 Selected inverter/plant

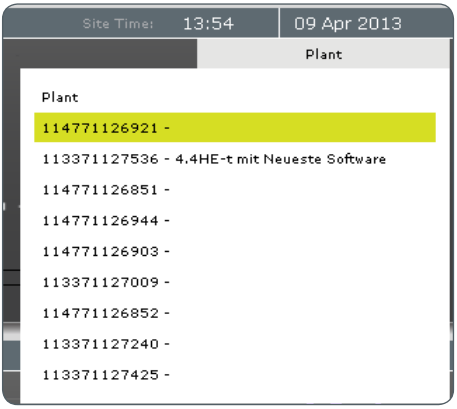
Display

In the area on the right, the values for the following operating data are displayed for the selected inverter or for the entire plant:

- Input: Current, voltage, power
- Output: Current, voltage, power
- Operating hours (only for an individual inverter)

Selection

In the area at the top right, either the entire plant or an individual inverter can be selected.



1. Move the mouse over the light-coloured field with the plant or inverter name.
   A list of the inverters in the plant is displayed.
2. Select an inverter.
   The system status, production status and operating hours of the selected inverter are displayed.

7.4.3 System status

The **System status** area shows the status and operating mode of the plant or selected inverter.

Status	Meaning	LED
	Normal; Inverter is operating with no warnings or alarms.	Green
	Warning; Inverter is still running, but only with limited functions.	Yellow Green
	Alarm; Inverter is in shutdown mode, an alarm is present.	Red

Mode	Meaning	LED
	Sleep mode; Automatic shutdown, input power level is insufficient.	Yellow
	Startup; Initialisation of input values and network conditions	Yellow Green
	Operation; Electricity is fed into the grid.	Green
	De-rating; Output power is reduced to prevent the inverter from overheating.	Yellow Green
	Close down; Inverter is in shutdown mode.	Yellow
	Shutdown; Inverter/system fault or unstable operating conditions	Red
	Service; Inverter can be manually overwritten.	Yellow

Current electricity production

The current electricity production is shown as a bar diagram ranging from 0 W to the nominal power of the plant or selected inverter.

7.4.4 Production status

The yield of the plant or selected inverter is displayed in this area.

Today	Display of the feed-in curve for today (0 ... 24 h)
Month	The yield for each day in the current month is shown as a bar diagram (1 ... 31).
Year	The yield for each month in the current calendar year is shown as a bar diagram

Detailed values are displayed if you hover with the mouse over the graphics.

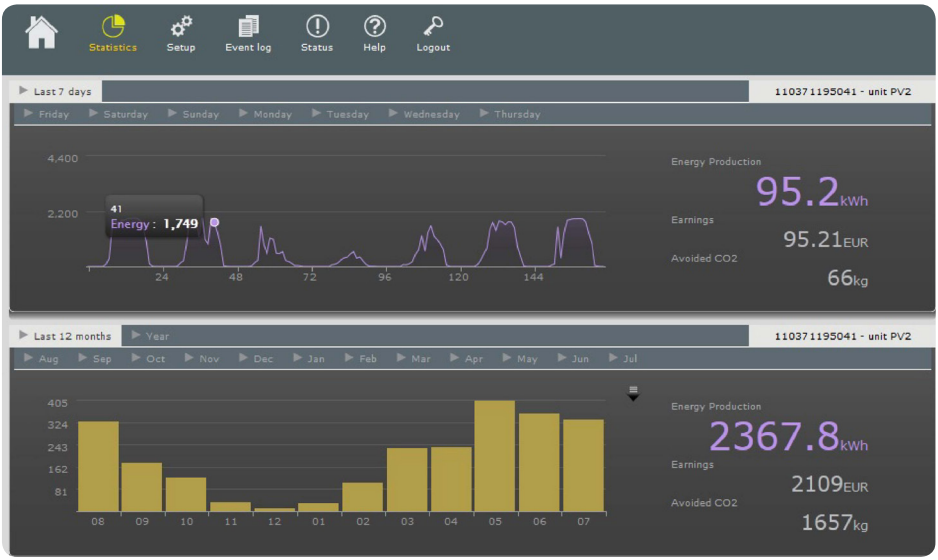
7.4.5 Language selection

The web server offers the following menu language options:

Icon	Language	Icon	Language
	English		French
	German		Italian
	Spanish		

→ Click the icon for the required language.
The operator guidance language is changed over.

7.5 Statistics



7.5.1 Selected inverter/plant

The plant or individual inverter is selected in the same way as on the home screen.

7.5.2 Last 7 days

The graphic shows the feed-in curve for the plant or selected inverter for the last 7 days. The web server totals the performance data and displays the following cumulative values:

Energy generation	Energy generated during the selected period
Earnings	Earnings for the energy generated
CO_2 savings	CO_2 emissions saved as a result of the energy generated

Detailed values are displayed if you hover with the mouse over the graphics.

7.5.3 Last 12 months

Each of the last 12 months is shown as a bar in the graphic.
The remaining information corresponds to the information for the **Last 7 days**.

Download energy values

→ Click (on the right above the last bar).
The energy values for the last 12 months are downloaded as an html file.

7.6 Setup

The **Setup** menu contains the following submenus:

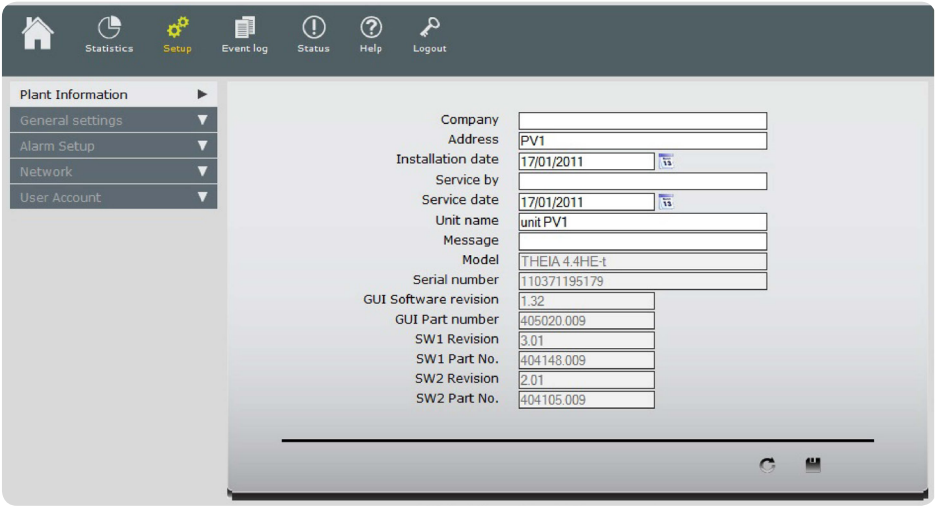
- GS Power Plant Information
- General setup
- Alarm setup
- Network
- User account

7.6.1 Navigation

The **Setup** menu contains the following navigation icons:

Icon	Meaning
	Exit menu without saving
	Save changes

7.6.2 Setup –> GS Power Plant Information

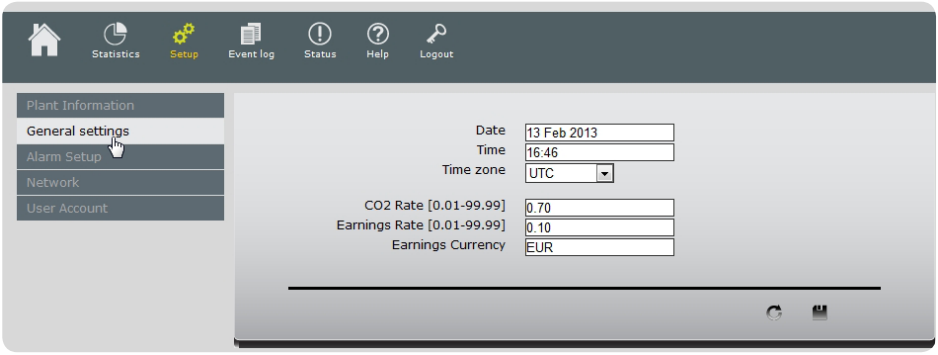


This menu allows you to provide a plant description that suits your own requirements.

You will need to have these data available for service situations.

- Data displayed in black can be edited.
- Data that are greyed out are defaulted by the system and cannot be edited.

7.6.3 Setup –> General Setup



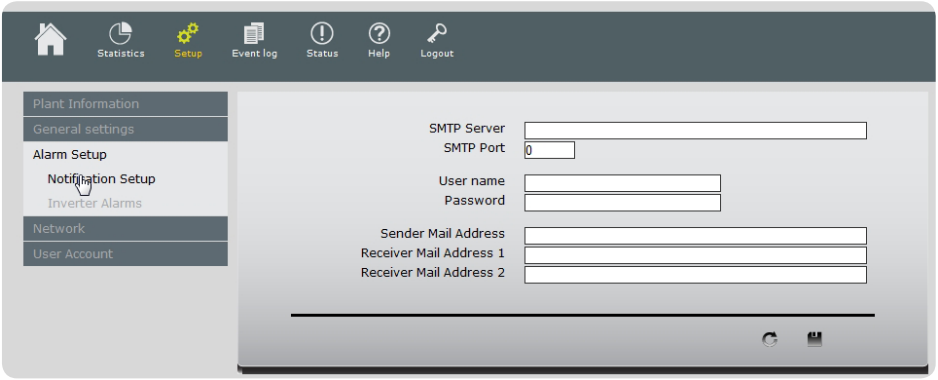
The following data can be set in this menu:

- Date
- Time
- Time zone

- CO_2 rate (in kg/kWh)
- Rebate (per kWh)
- Earnings currency

7.6.4 Setup –> Alarm Setup

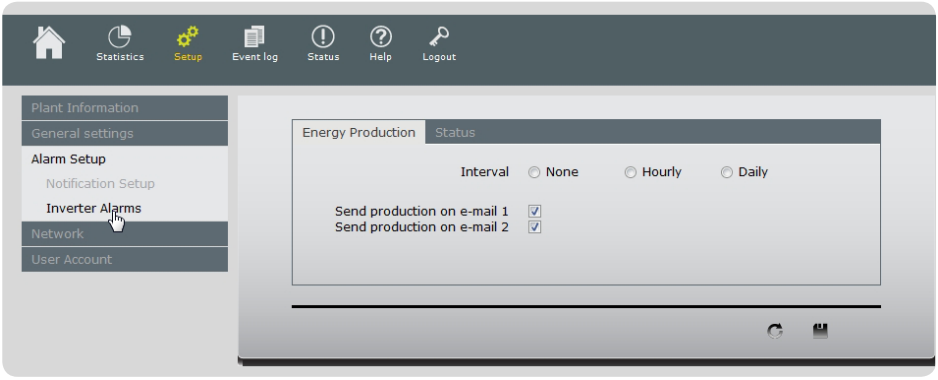
Setup –> Alarm Setup –> Notification Setup



The addresses for automatic notification via e-mail are set up in this menu.

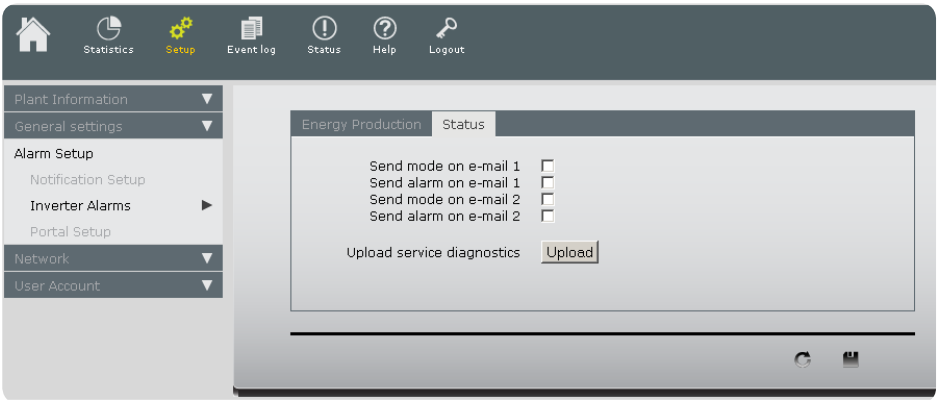
SMTP server	IP address of the internet service provider's SMTP server in digits
SMTP port	25 (default) or as defined by the ISP
User name	As defined by the ISP
Password	As defined by the ISP
Sender e-mail address	Corresponds to the IP address of the inverter
Receiver e-mail 1	E-mail address of recipient 1 in standard format
Receiver e-mail 2	E-mail address of recipient 2 in standard format

Setup –> Alarm Setup –> Inverter Alarms –> Energy Production



The recipients and timings for automatic transmission of energy production are selected in this menu.

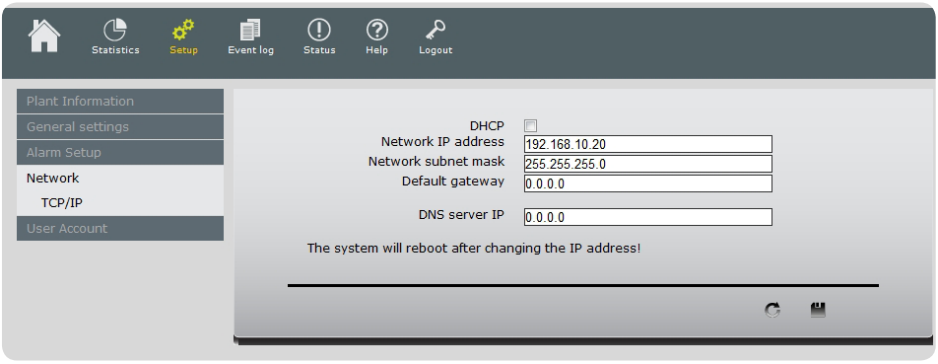
Setup –> Alarm Setup –> Inverter Alarms –> Status



In this menu, e-mail recipients are selected for automatic notification about operating modes and alarms.

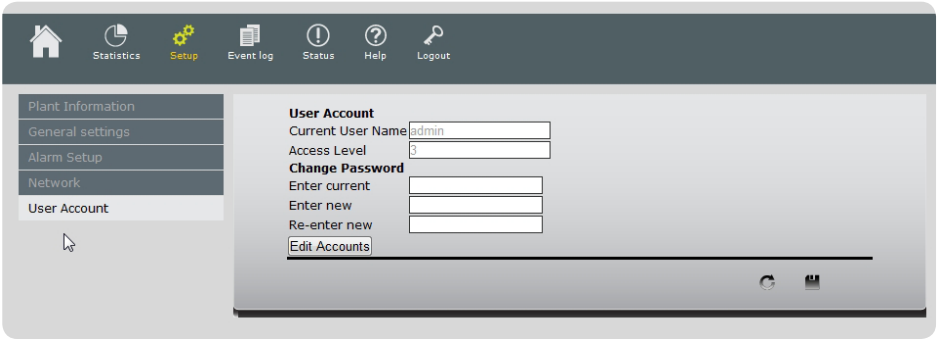
7.6.5 Setup –> Network

CAUTION
No connection between the inverter and the network/internet!
- ▶ Do not make any changes to the network data unless the network is being reconfigured.



DHCP	Values are automatically obtained for the network settings in this setup screen.
(Network) IP address	IP address of the inverter connected via Ethernet cable
Network subnet mask	E.g. 255.255.255.0
Network gateway	Address of the router in the network
DNS server IP	IP address of the Domain Name Server

7.6.6 Setup –> User Account



User account

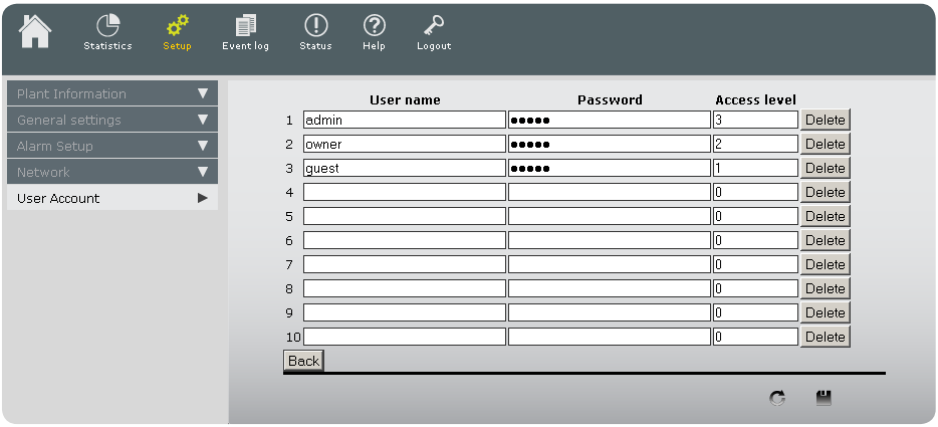
The upper part of this menu shows the current user with his/her access authorisation level.

Change password

In this area, the password can be changed for the user displayed above.

Edit account

After pressing the button **Edit account**, you will see the list of users created on this web server:



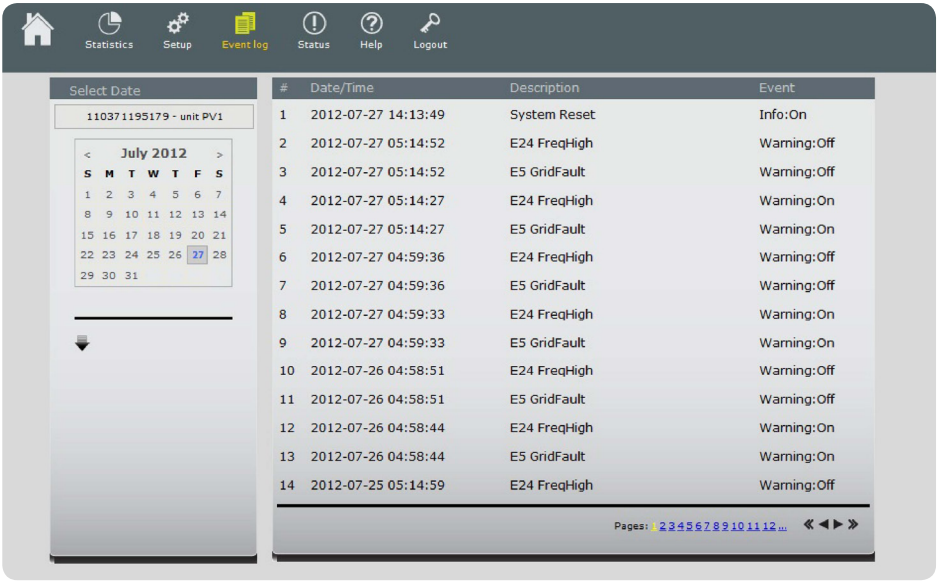
In the default setting, three users with different access authorisation levels are set up. The user name and password are identical in the default setting.
A maximum of 10 users can be maintained.

Access authorisation levels

Level	User	Rights
3	admin	▪ Full read/write access
2	owner	▪ Read/write access to all data ▪ Exception: User Accounts and Network Setup
1	guest	▪ Read access to all data ▪ No access to the Setup menu

CAUTION
Risk of unauthorised access to the web server!
▶ Change all passwords during configuration of the system. Do not use standard passwords.

7.7 Event Log


Statistics
Setup
Event log
Status
Help
Logout
Select Date
110371195179 - unit PV1
July 2012
S M T W T F S
1 2 3 4 5 6 7
8 9 10 11 12 13 14
15 16 17 18 19 20 21
22 23 24 25 26 27 28
29 30 31
Date/Time Description Event
1 2012-07-27 14:13:49 System Reset Info:On
2 2012-07-27 05:14:52 E24 FreqHigh Warning:Off
3 2012-07-27 05:14:52 E5 GridFault Warning:Off
4 2012-07-27 05:14:27 E24 FreqHigh Warning:On
5 2012-07-27 05:14:27 E5 GridFault Warning:On
6 2012-07-27 04:59:36 E24 FreqHigh Warning:Off
7 2012-07-27 04:59:36 E5 GridFault Warning:Off
8 2012-07-27 04:59:33 E24 FreqHigh Warning:On
9 2012-07-27 04:59:33 E5 GridFault Warning:On
10 2012-07-26 04:58:51 E24 FreqHigh Warning:Off
11 2012-07-26 04:58:51 E5 GridFault Warning:Off
12 2012-07-26 04:58:44 E24 FreqHigh Warning:On
13 2012-07-26 04:58:44 E5 GridFault Warning:On
14 2012-07-25 05:14:59 E24 FreqHigh Warning:Off
Pages: 1 2 3 4 5 6 7 8 9 10 11 12 ...

For all inverters connected to the PC/internet, the current events are displayed in chronological (descending) sequence.

Navigation

Via calendar	Select the required day in the calendar. The events for this day are displayed in chronological (descending) sequence.
Scroll	Via the buttons

Downloading the Event Log

→ Click .
The events for the selected period are downloaded as a txt file.

7.8 Status

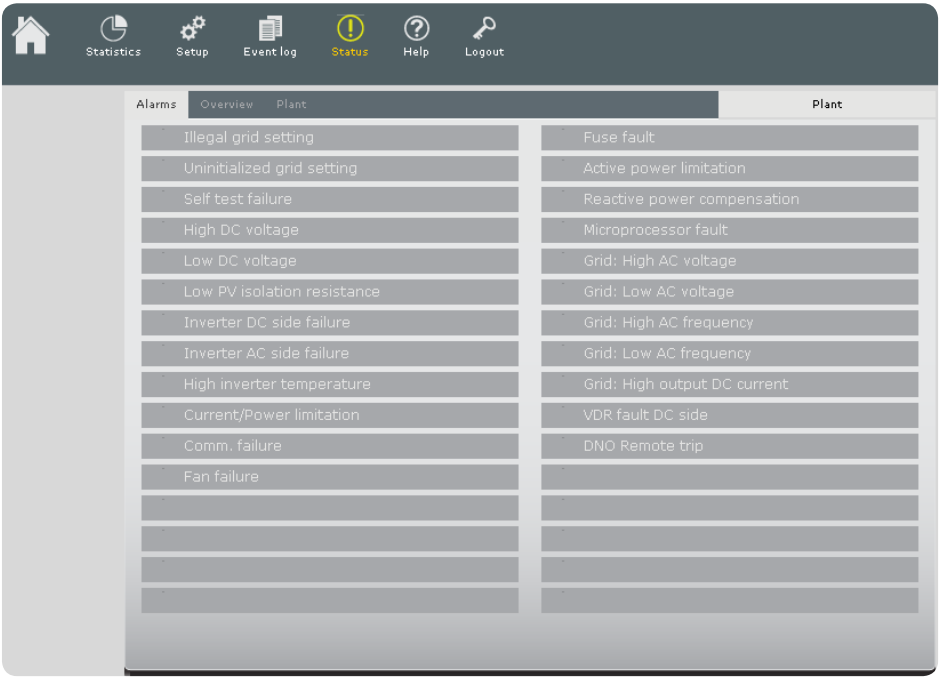
The Status menu contains the following submenus:

- Alarm
- Overview
- Plant

Selecting the inverter/plant

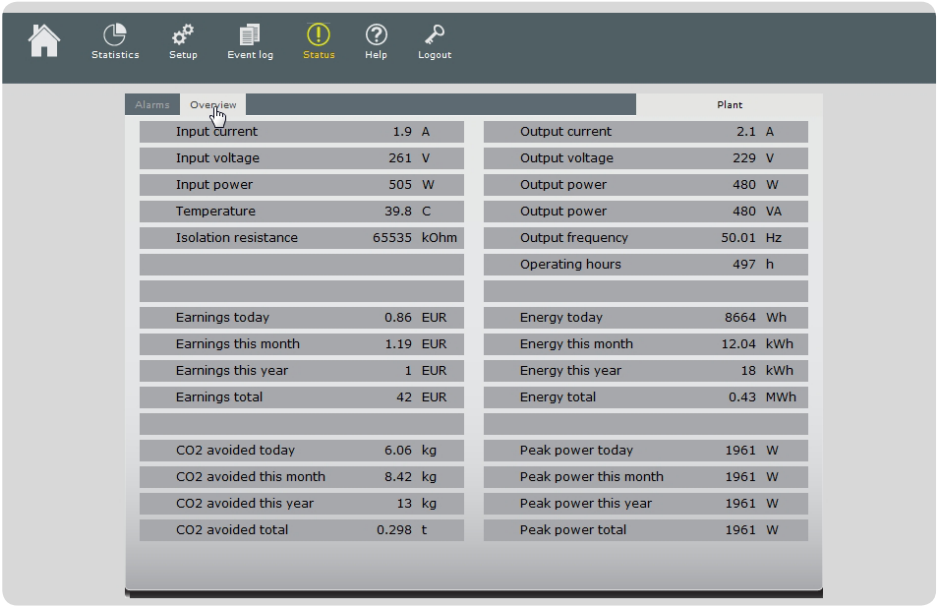
In the status menu bar on the far right, you can select either the entire plant or an individual inverter – see Home menu.

7.8.1 Status –> Alarm



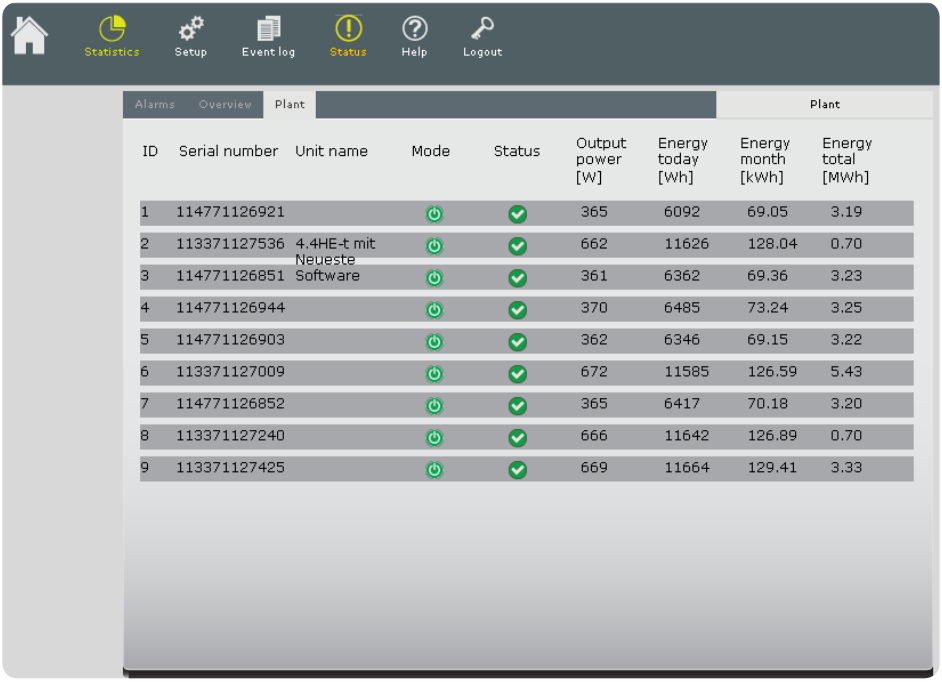
This screen shows all potential warnings and alarms that can occur on an individual inverter or on the overall plant.
If an alarm is active for the selected inverter or for the entire plant, it is marked with a yellow warning triangle.

7.8.2 Status –> Overview



This menu offers an overview of the technical profile of the inverter/plant.

7.8.3 Status –> Plant



This menu shows the operating mode, status and some of the feed-in data for the individual inverters in the plant.

7.9 Help

This menu displays contact information.

7.10 Logout

This menu is used to exit the web server.
The login screen is displayed again.

8 Maintenance and cleaning

DANGER
Risk of death due to electric shock!
- ▶ Only allow inverters to be opened by the PLATINUM Service department or by service partners authorised by PLATINUM.

DANGER
Risk of death due to high DC and AC voltages!
- ▶ Wear insulating protective clothing and face protection.
- ▶ Maintenance and cleaning is to be performed only by trained specialist personnel.
  The trained specialist personnel must be granted permission by the energy provider responsible.

Before every maintenance or cleaning task:
- ▶ Switch off mains voltage supply (safety device).
- ▶ Set the switch knob of the DC isolator to **0**.
- ▶ Wait at least 60 minutes until the capacitors are discharged.
- ▶ Make sure that no voltage is applied to the DC cables.

8.1 Maintenance

Have the inverter serviced at least once a year by the PLATINUM Service department or by a service partner who is authorised by PLATINUM.

8.2 Cleaning

CAUTION
Destruction of the inverter!
- ▶ The inverters must not be cleaned with a steam cleaner.

To ensure effective cooling, regularly clean the cooling element on the rear of the inverter. Suitable tools for this:
- Vacuum cleaner
- Soft brush
- Compressed air

9 Faults and troubleshooting

9.1 Checklist in the event of faults

If the inverter is not feeding any electricity into the grid, check the following:

- ☐ Are all of the connections in the system correctly attached?
- ☐ Are both the AC protective switch(es) and the DC protective switch(es) switched on?
- ☐ Is there enough solar radiation to generate electricity (>7 W)?
- ☐ Are the operating mode display LEDs normal?
- ☐ Are any warnings or alarms shown on the display (see Event Log)?
- ☐ Do the values for the PV voltage, PV current and PV power match those on the display?

If all of these points are OK but still no electricity is being fed in:
Contact the installation company.

9.2 Event list

The inverter automatically detects problems in the operating status and displays messages in plain text on the screen.
Detailed information about warnings and alarms can be viewed in the **Event Log** menu.

The inverter distinguishes between two types of message:

W	Warning, yellow LED is on
A	Alarm, red LED is on

If an alarm is present, the inverter switches off automatically.
A warning is displayed if e.g. the feed-in power drops below the threshold of 7 W.

- The complete event list can be downloaded from our website www.platinum-nes.com.
- When contacting with the PLATINUM service department, have the serial number and event code to hand.

Code	Message	Meaning	Remedy
E01	Field fault	▪ PV module failure	➝ Contact the installation company.
E02	Input protective switch open	▪ DC switch open	➝ Switch on the DC switch. ➝ If already switched on: contact the installation company.
E03	Inverter failure	▪ Inverter failure	➝ Contact the installation company.
E04	Output protective switch open	▪ AC protective switch open	➝ Switch on the AC protective switch. ➝ If already switched on: contact the installation company.
E05	Grid fault	▪ No grid detected ▪ No synchronisation with the grid	➝ Check the AC protective switch. ➝ Measure whether the grid voltage is present at the AC terminals. ➝ Make sure that the DC switch(es) is/are switched on and that the DC power is >7 W.
		▪ Fault in the country settings	➝ Check the country settings..
E06	GUI fault	▪ Display not responding	➝ Switch off the AC side and wait 3 seconds. ➝ Switch the AC side back on again and wait 30 seconds. ➝ If the fault persists: contact the installation company.
E07	High voltage on the input side	▪ DC voltage threshold of 600 V DC exceeded	➝ Contact the installation company.
E08	Low voltage on the input side	▪ DC voltage too low to operate the inverter	➝ This fault will automatically be rectified when the PV voltage reaches 230 V. ➝ If the fault is displayed even during daylight and the PV voltage is >230 V: contact the installation company.

Code	Message	Meaning	Remedy
E09	Low PV isolation resistance	▪ PV isolation resistance is below the permitted minimum threshold.	→ Check the position of the DC jumper. → If the DC is correctly plugged: contact the installation company.
E10	Failure on the DC side	▪ Inverter fault on the DC side	→ If the inverter is in shutdown mode, switch off the AC side first and then the DC side. → Wait for 30 seconds and switch the AC side and DC side back on again. → If the fault persists: contact the installation company.
E11	Failure on the AC side	▪ Inverter fault on the AC side	→ If the inverter is in shutdown mode, switch off the AC side first and then the DC side. → Wait for 30 seconds and switch the AC side and DC side back on again. → If the fault persists: contact the installation company.
E12	High inverter temperature	▪ Maximum permitted internal inverter temperature exceeded	→ Check whether the ambient temperature is within the permitted limits. → Check whether there is adequate ventilation. → Check whether the correct minimum distances have been maintained as stated in this installation and user guide. → Make sure that the inverter is protected against direct sunlight. → Make sure that the ventilation system is clean.

Code	Message	Meaning	Remedy
E13	Low inverter temperature	▪ The internal temperature of the inverter is too low.	→ The inverter will restart once the temperature is back within the permitted range. → If the fault persists: contact the installation company.
E14	Current/power limitation	▪ PV power exceeds the nominal power of the inverter	→ Check whether there is adequate ventilation. → Check whether the correct minimum distances have been maintained as stated in this installation and user guide. → Make sure that the inverter is protected against direct sunlight. → Make sure that the ventilation system is clean.
E15	Communication fault	▪ Internal communication fault	→ If the inverter is in shutdown mode, switch off the AC side first and then the DC side. → Wait for 30 seconds and switch the AC side and DC side back on again. → If the fault persists: contact the installation company.
E16	Ventilation fault	▪ No internal air circulation	→ Contact the installation company.
E17	Fuse fault	▪ One or more fuses or safety switches have blown.	→ Contact the installation company.
E18	Active current limitation		→ Contact the installation company.
E19	Reactive power compensation		→ Contact the installation company.

Code	Message	Meaning	Remedy
E20	Microprocessor fault	▪ Diagnosis support in service situation	→ If the inverter is in shutdown mode, switch off the AC side first and then the DC side. → Wait for 30 seconds and switch the AC side and DC side back on again. → If the fault persists: contact the installation company.
E21	Grounding current fault		→ Contact the installation company.
E22	High AC voltage	▪ AC voltage too high, feed-in interrupted	→ The inverter will be restarted once the voltage is back within the permitted range. → Check the country settings. → If the fault persists: contact the installation company.
E23	Low AC voltage	▪ AC voltage too low, feed-in interrupted	→ The inverter will be restarted once the voltage is back within the permitted range. → Check the country settings. → If the fault persists: contact the installation company.
E24	High frequency on the output side	▪ Grid voltage frequency is above the upper limit.	→ The inverter will be restarted once the frequency is back within the permitted range. → Check the country settings. → If the fault persists: contact the installation company.
E25	Low frequency on the output side	▪ Grid voltage frequency is below the lower limit.	→ The inverter will be restarted once the frequency is back within the permitted range. → Check the country settings. → If the fault persists: contact the installation company.

Code	Message	Meaning	Remedy
E26	High DC current on the output side	▪ DC share of grid feed-in current is too high.	→ The inverter will attempt to restart as soon as the fault is rectified. → If the fault persists: contact the installation company.
E27	Output current imbalance	▪ Imbalance between the output current phases (only for 3-phase current)	→ Contact the installation company.
E28	Grid fault, but still working	▪ Fault bypass	→ Contact the installation company.
E29	VDR fault on the DC side	▪ Damaged varistors on the DC side.	→ Contact the installation company.

9.3 Faults and troubleshooting

Fault	Cause	Remedy
No longer any e-mail protocols	▪ Changed SMTP IP address	→ Find out the new SMTP IP address from your internet service provider (ISP).
Obviously incorrect values in the statistics	▪ Fault in the Energy Log	→ On the master inverter run **Recreate Plant Energy Log**, see **Commands –> Plant Commands** menu

10 Technical data

Input variables	2100 H	3000 H	4000 H	4600 H
Max. PV power	2,350 Wp	3,450 Wp	4,450 Wp	5,150 Wp
Max. DC power (cos φ = 1)	2,100 W	3,000 W	4,000 W	4,600 W
MPPT voltage range	230 V – 480 V			
Max. input voltage	600 V			
Max. MPPT input current	9.5 A	13.5 A	18.0 A	21.0 A
Number of string inputs	3			
Number of MPP trackers	1			
Short circuit current	14.2 A	20.2 A	27.0 A	31.5 A
Output variables	**2100 H**	**3000 H**	**4000 H**	**4600 H**
Nominal power (cos φ = 1)	2,000 W	2,900 W	3,800 W	4,400 W
Nominal current	9.0 A	13.0 A	17.0 A (16.0 A *)	20.0 A (16.0 A *)
Max. apparent power	2,000 VA	2,900 VA	3,800 VA	4,400 VA
Max. AC current	10.5 A	15.2 A	19.7 A	23.0 A
Fuse protection on the AC side	13 A	20 A	25 A	25 A
Min. start power	7 W			
Network voltage / frequency	230 V (+/– 20%) / 50 Hz (+/– 5%)			
Feed-in/monitoring phases	1 feed-in phase / 1 monitoring phase			
Max. permitted grid impedance Z_{max}	n/a	n/a	446 mΩ	379 mΩ
Standby consumption	<1 W			
Short-circuit strength	Yes			
Power factor (cos φ)	0.9 ind. ... 0.9 cap.			
Max. short circuit current	45.0 A			
Max. switch-on current	20 A (max. duration 5 ms)			
Efficiency	**2100 H**	**3000 H**	**4000 H**	**4600 H**
Max. efficiency	96.9 %	97.0 %	97.2 %	97.3 %
Euro efficiency	96.0%	96.2 %	96.6 %	96.9 %
Type name	**2100 H**	**3000 H**	**4000 H**	**4600 H**

Interfaces	... H
DC isolation device	Optional switch integrated in device for isolation from generator field
DC connection	DC connector, Multi-Contact MC4
AC connection	Screw-type terminals
Network	Ethernet / CAN
Ambient conditions	**... H**
Operating temperature	–25 °C to +65 °C
Max. temperature for rated power	45 °C
Storage temperature	–30 °C to +80 °C
Rel. Humidity	4% to 99%
Max. operating altitude	2000 m
Protection class	IP66 in accordance with DIN EN 60529
Level of contamination	II, external and internal use possible
Inverter data	**... H**
Weight ▪ 2100 H, 3000 H ▪ 4000 H, 4600 H	 19 kg 21 kg
Dimensions (H x W x D)	610 x 353 x 154 mm
Overvoltage category	DC side: II AC side: III
Reverse voltage protection (DC)	Yes
Ground fault monitoring	DC side: insulation test AC side: AFI
Protection class / overvoltage protection	I / III
Optical display	Full graphic LCD, 170 x 76 pixels
Integrated datalogger	▪ Storage capacity sufficient for operating time of 20 years ▪ Integrated web server
Switching concept	HF transformer with electric isolation
Cooling concept	Convection cooling

11 Taking out of operation

DANGER
Risk of death due to high DC and AC voltages!
- ▶ Wear insulating protective clothing and face protection.
- ▶ Inverters are only to be uninstalled by trained specialist personnel. The trained specialist personnel must be granted permission by the energy provider responsible.
- ▶ Switch off mains voltage supply (safety device).
- ▶ Set the switch knob of the DC isolator to **0**.
- ▶ Wait at least 60 minutes until the capacitors are discharged.
- ▶ Make sure that no voltage is applied to the DC cables.

WARNING
Injury may result if the inverter falls!
- ▶ Get a second person to help with assembly and disassembly.
- ▶ Wear safety shoes during assembly and disassembly.
- ▶ Ensure that the inverter is positioned securely.

The procedure for taking inverters out of operation is the reverse of that for installation and assembly.

12 Disposal

- Packaging and replaced parts are to be disposed of in accordance with the regulations of the country in which the inverter was installed.
- Do not dispose of PLATINUM inverters in household waste.

- Inverters can be fully returned to PLATINUM at the end of their service life.
- PLATINUM inverters can be disposed of via municipal waste management for electrical devices.

Diehl AKO Stiftung & Co. KG
Pfannerstraße 75-83
88239 Wangen im Allgäu, Germany
Tel.: +49 7522 73562
www.platinum-nes.com